

# THE UNIVERSITY OF LAHORE

## Course Out line

### CS-09101 : Introduction to Information & Communication Technologies

#### Bachelor of Science in Computer Science

#### Fall 2020 Session

Effective from: 28<sup>th</sup> September, 2020

<b>Credit Hours</b>	4 (3+1)
<b>Pre-requisite(s)</b>	---
<b>Post-requisite</b>	---
<b>Course Type</b>	Core for BSCS
<b>Course Duration</b>	16 Weeks
<b>Weekly tuition pattern</b>	2 Lectures (90 Minutes each), 1 Lab session of 180 Minutes
<b>Course Structure</b>	Presentation by instructors, lab tasks, group projects, quizzes, assignments
<b>Course Style</b>	The course will be delivered mostly in a classroom environment and lab sessions in computer lab.
<b>Teaching Team</b>	<p>Ms. Taha Afzal (<a href="mailto:taha.afzal@cs.uol.edu.pk">taha.afzal@cs.uol.edu.pk</a>)</p> <p>Mr.Hassan Bajwa (<a href="mailto:hassan.ali@cs.uol.edu.pk">hassan.ali@cs.uol.edu.pk</a>)</p> <p>Mr.Adeem Ali Anwar (<a href="mailto:adeem.anwar@cs.uol.edu.pk">adeem.anwar@cs.uol.edu.pk</a>)</p> <p>Mr.Ahmad Saeed Khan (<a href="mailto:ahmad.saeed@cs.uol.edu.pk">ahmad.saeed@cs.uol.edu.pk</a>)</p>

**Designed By:**

Dr. Abbas Khalid,  
Assistant Professor CS & IT Department  
The University of Lahore

## 1- Course Description

This is an introductory course in Computer Science discipline, introducing basic definitions & concepts, Hardware: Computer Systems & Components. Storage Devices, Number Systems, Software: Operating Systems, Programming and Application Software, Problem solving skills and Programming fundamentals, Databases and Information Systems, Networks, Data Communication, The Internet, Browsers and Search Engines, The Internet: Email, Collaborative Computing and Social Networking, The Internet: E-Commerce, IT Security and other issues.

## 2- Objectives

The objective of the course is to present a complete picture of the dynamic computer science field. The specific objectives of this course include:

- Built an appreciation for the fundamental concept in computing.
- Enables students to use software applications and tools.
- Lay the foundation necessary for problem solving skills and advance level in computer science.
- By studying it students will learn how computing impacts on their daily life.
- Introduce social and legal issues of computer science.

## 3- Student Learning Outcomes

On completion of this course students should be:

- Familiar with basic parts of a computer system i.e. CPU, RAM, Cache and their relationships.
- Understand and use basic computer terminology and different application software like MS word, MS PowerPoint and MS excel.
- Motivate themselves for problem solving skills, fundamentals of programming and advance level concepts of computer science.
- Interpret and comply the ethical principles, laws and regulations regarding computer science.
- Know how computing and technology tools used to enhance learning, increase productivity, and promote creativity.

## 4- Tools & Techniques

No specific tool is required during the conduct of this course in theory classes, however use of MS Office, IDEs for C++ programming is recommended in lab sessions for practicing word/document processing, presentation/slides making, spreadsheet processing and programming fundamentals.

## 5- Text Books and other resources

### Text Books:

- *Introduction to Computers, 6th International Edition, Peter, N. McGraw-Hill.*
- *C++ How to Program 5<sup>th</sup> Ed., Deitel and Deitel.*
- *Starting out with C++ by Tony Gaddis.*

### Other resources:

- *Using Information Technology: A Practical Introduction to Computer & Communications. 6th Edition. Williams, S. McGraw-Hills.*
- *Computers, Communications & information: A user's introduction Sarah, E. Hutchinson.*

## 6- Additional Course Requirement

In addition to the objectives of this course, students are expected to gain skills which would be needed in the professional work environment. These skills include but not limited to: Writing, Presentation, Decision Making and Teamwork.

## 7- Course Outline

The lecturers are supposed to complete the following topics/sub-topics before the mid/final term examination as prescribed in the course outline below:

Week No.	Lecture No.	Contents
Week 1	Lecture 1	<b>Introduction</b> What is computer? What does a computer do? Information process cycle. Detail discussions on Input, process, output and storage activities of computer. What is Data and information Why we need data and information? <b>Types of computer</b> (Digital, analog and hybrid computer)
	Lecture 2	<b>Classification of computers</b> (super, mainframe, mini and microcomputers) <b>History of Computers</b> Computer evolution to their present form <b>Computer generations</b> Features of each generation Hardware used Language used
Week 2	Lecture 3	<b>Computer System Architectures</b> <b>Computer hardware Components:</b> Input devices, Pointing , scanning, reading devices Output Devices
	Lecture 4	<b>Detail discussion on System unit</b> CPU and its parts functions ( CU,ALU, Registers) CPU Instruction cycle.

<b>Week 3</b>	Lecture 5	<b>Detail discussion on System unit (Continue!)</b> <ul style="list-style-type: none"> <li>Memory &amp; its types: RAM (SRAM, DRAM)</li> <li>ROM (PROM, EPROM, EEROM)</li> <li>Cache types: RAM Cache &amp; its levels, Disk cache</li> <li>Storage devices &amp; its examples.</li> </ul>
	Lecture 6	<b>Number systems and Computer codes</b> Number systems, non-positional and positional number system, Decimal, Binary, Octal and Hexadecimal number system. Conversion from one number system to another number system
<b>Week 4</b>	Lecture 7	<b>Method of conversion</b> Binary to octal Octal to binary Binary to hexadecimal Hexadecimal to binary
	Lecture 8	<b>Computer arithmetic</b> Basic arithmetic operations using binary numbers. Addition, subtraction, complementary method of binary subtraction.
<b>Week 5</b>	Lecture 9	<b>Computer arithmetic (Continue!)</b> Binary Multiplication and division Practice questions
	Lecture 10	<b>Boolean Logic Gates</b> AND, NAND, OR, NOR, XOR, XNOR and Not Gate <b>Boolean Algebra basics and its usage</b>
<b>Week 6</b>	Lecture 11	<b>Boolean Algebra basics, laws, rules, theorems, and its usage</b>
	Lecture 12	<b>Computer Software &amp; Its Types</b> System S/W, Application S/W Categories and examples <b>General Introduction to operating systems</b>
<b>Week 7</b>	Lecture 13	<b>General Introduction to Databases and Software Engineering (SDLC)</b>
	Lecture 14	<b>General Introduction to Networking and Artificial Intelligence</b>
<b>Midterm Week</b>		
<b>Week 9</b>	Lecture 15	<b>Problem Solving Skills.</b>
	Lecture 16	<b>Algorithm definition, design, and implementation</b> Difference between Pseudo code, Plain/Structured English, Basic code Etc.
<b>Week 10</b>	Lecture 17	Detail discussion on Algorithms, Flowcharts designing, and Pseudo Code with examples
	Lecture 18	Introduction to C++ Programming, Structure and Elements of C++ Program, Phases of a C++ program, Writing a first C++ program.
<b>Week 11</b>	Lecture 19	Introduction to IDE, Input and Output, Escape Sequences.
	Lecture 20	Variables, Data Types

<b>Week 12</b>	Lecture 21	Arithmetic Operators, Assignment Operator, Arithmetic Assignment Operators, Relational Operators, Logical Operators.
	Lecture 22	Precedence and Associativity of operators.
<b>Week 13</b>	Lecture 23	Postfix and prefix increment and decrement operators
	Lecture 24	One-Way Selection Using the if-statement, Two-Way Selection Using the if...else statement, Examples.
<b>Week 14</b>	Lecture 25	If...else practice problems hands-on
	Lecture 26	If...else If... else hands-on practice problems
<b>Week 15</b>	Lecture 27	switch cases basics
	Lecture 28	practice questions hands-on on switch cases
<b>FINAL EXAMS</b>		

## 7- Tentative Grading Distribution and Policy

No.	Assessment	Percentage
1.	Mid Exam	20%
2.	Final Exam	40%
3.	Assignments	10%
4.	Quizzes	10%
5.	Lab	20%
Total		100%

## 8- Attendance Requirements

You are expected to attend all lectures, seminars, tutorials, and lab sessions or any other classroom activity. Where you fail to attend classes, you cannot expect the lecturer to brief you on what you have missed. You are responsible for your attendance, not the academic staff. Attendance at tutorials and lab sessions will be strictly monitored, and failure to attend will be taken into account.

## 9- General Information

- Students are required to be familiar with the University's code of conduct, and to abide by its terms and conditions.
- Students must provide proper references to acknowledge other's works/ideas. Students are required to follow American Psychological Association (APA) style of referencing or any other style recommended by the department.
- In order to avoid plagiarism, students are required to follow the guidelines provided by the Department/University.
- Students may use any sources (acknowledged of course) other than the assignments of fellow students.

### Approval

Cluster Head:	Head of Department:
Dr. Abbas Khalid	Dr. Atif Chatha