



# **Department of Computer Science**

## **CL 117 – Intro. To information and communication technologies (BCS-1A)**

**FALL 2020**

**Instructor Name:** Muhammad Waqas Manzoor

**Email address:** waqas.manzoor@nu.edu.pk

**Office Location/Number:** Liberty lab 237

**Office Hours:** After Class

**TA Name (if any):** NA

**Email address:** NA

**Office Location/Number:** NA

**Office Hours:** NA

### **Course Information**

**Program:** BS

**Credit Hours:** 1

**Type:** Core

**Pre-requisites (if any):** NO

**Course Website (if any) :** NA

**Class Meeting Time:** After Class

**Class Venue:** CS LAB 6

### **Course Description/Objectives/Goals?**

Objective of this course is to give fundamental understanding of Information and Communication technologies and related applications. Basic concepts of Computer architecture and organization, number system (binary, hexadecimal, decimal), application and importance of mathematics in computer science, operating system, database management and relational database concepts, big data, computer networks and communication, internet and world wide web, artificial intelligence, graphics.

### **Course Learning Outcomes (CLOs):**

At the end of the course students will be able to:	Domain	BT* Level
Convert one number from one number system to another and understand the importance of mathematics in CS.	C	1
Understand the basic architecture of a computer system and have a basic know how of various operating systems.	C	1
Have a fundamental understanding of data management and its applications and know a few applications of big data.	C	1
Understand the basic components of a communication system	C	1
Understand the basics of web development and should be able to develop a web page	C	3
Have a basic know how of various AI applications	C	1
Understand the basics of graphics and be able to use a tool for graphics or animations	C	3

\* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain.

**Bloom's taxonomy Levels:** 1. Knowledge, 2. Comprehension, 3. Application, 4. Analysis, 5. Synthesis, 6. Evaluation

## Tentative Weekly Schedule

<b>Week</b>	<b>Topic</b>	<b>Lecture &amp; Activity</b>
1	Introduction	History and evolution of computing devices. Modern applications of computer Science
2	Number System	Representation of data in binary + conversions in decimal and binary number system representation of signed/unsigned numbers
3	Computer Organization	High level architecture of computer system Basic components of processor and memory
4	Mathematics in Computer Science	Importance of mathematics in computer science and its applications Introduction to the concepts of optimization, graphs, functions and basic counting techniques with reference to their application in mathematics
5	Operating systems	Concept of resources and management of shared resources. Introduction to various operating systems (windows, Linux, Android)
6	Data Management and its applications	Role of data in computer science, types of data (structured, semi structured, unstructured), Introduction to database systems
7	Computer Graphics	Introduction to the field + Use of simple animation tools
8	Communication	Introduction to the basic components of communication system Brief overview of working of computer communication
9	Web development	Introduction to html and its basic tags Exercise to develop a static 3-4 page website
10	Artificial Intelligence	Basic introduction to the field and its commonly used applications One detailed application like autonomous cars
11	Big data	Big data and its applications + challenges A case study like friend/product recommendation in facebook
12, 13, 14		Student Presentations
		<b>FINAL EXAM</b>

### **(Tentative) Grading Criteria**

1. 9-10 Class Activities (25%)
2. Group Presentations (25%)
3. Final Exam (50%)

## **Course Policies**

1. Quizzes may be un-announced.
2. No makeup for missed quiz or class activity or group presentation.
3. 80% attendance

## **Grading Model**

Absolute