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| Logo Fast | **NATIONAL UNIVERSITY**  **of Computer & Emerging Sciences, Lahore** |

Department of Computer Science

**CL 117 – Intro. To Information and Communication Technologies**

**FALL 2020**

**Instructor Name:** Saad Farooq

**Email address:** [saad.farooq@nu.edu.pk](mailto:saad.farooq@nu.edu.pk)

**Office Location/Number:** Exam Hall (Office No: M-119)

**Office Hours:** Tue 02:00-03:00 PM, Wed 02:00 – 03:00 PM

**Course Information**

**Program:** BS **Credit Hours:** 3 **Type:** Core

**Class Meeting Time:** BCS-1H: Wed, 08:00 – 10:50 AM BSE-1A: Fri, 9:30 – 12:20 PM

**Class Venue:** Lab 4 for Section BCS-1H, Lab 9 for Section BSE-1A

**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.

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| **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**

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| **Week** | **Topic** | **Lecture & Activity** |
| 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 floating point 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 | |
|  | **FINAL EXAM** | |

**(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
4. Grading will be absolute