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| **Course Code** | CS211 Credit Hours **5** |
| **Course Title** | ICT Fundamentals |
| **Programme** | BSc. In Computer Science |
| **Course Description** | This course introduces the concept of ICT and its applications in the wide range of everyday life and our work environment. It addresses concepts related to the components of a computer system, data representation and encoding, computer networking and data transmission, introductory software engineering notions, computer system architecture, and technological trends of ICT.  The aim of this course is to introduce you to the basics of ICT and help you develop a culture of learning current technology trends so that you are able to harness the potentials of Information and Communications Technology.  This course is intended for students with little or no background in computer and communication technologies. |
| **Objectives** | Upon successful completion of this course students are expected to:   * Define Information, and Information Communications Technology * Understand the concept of a system and how it relates to information systems. * Understand the unification of computer & communication technologies * Understand computer Program execution sequence and organization of the CPU * Identify the basic components of the system unit and the way they interact to form a single computing system * Identify and describe different types of computer software * Understand data representation techniques and computer arithmetic * Understand computer-based communications and networking concepts * Know the processes and considerations of Business Process Engineering * Appreciate the concepts surrounding the Internet, e-commerce / e-business activities, and the World Wide Web * Understand the enabling/pervasive features of ICT * Identify major trends in ICT |
| **Textbook** |  |
| **References** | * Introduction to Information Systems. O’Brien & Marakas, Fifteenth Edition * Using Information Technology. Williams, Sawyer, Hutchinson * A Balanced Introduction to Computer Science by David Reed, 3rd Edition * Introduction to Computers. Peter Norton * Computers and information systems. Hutchinson/sawyer * Debbons, Anthony, et.al. Information Science: an integrated view. G.K. Hall, 1998 * Vickery, Brain and Alina Vickery. Information science in theory and practice. Bowker-Saur, 1987 * Introduction to computers and information Systems. Donald a. Morris * Modern systems Analysis. Jeffery A. Hoffer * Perrole, Judith, Computers and Social Change: Information, Property, and power (web Edition), 1997 * Computer Science an overview. Fifth edition by J. Glenn Bvrookshera |
| **Assessment Method** | |  |  | | --- | --- | | * Assignments: 10% | * Mid. Exam: 20% | | * Lab: 20% | * Final Exam: 50% | |
| **Term - Year** | * Autumn 2019 |
| **Instructor** | Abdella E. Mohammed |

**COURSE CONTENT**

1. Introduction
   1. Overview of ICT and CS
   2. Knowledge Hierarchy (and Management\*)
   3. Components of Information Systems
   4. Applications of ICT/IS/Computers
   5. Information Systems in Business
2. Computer Hardware and Software: Development and Evolution
   1. Evolution of Computers
   2. Computer Generations
   3. Milestones in Computer HW & SW Development
   4. Types and Characteristics of Computers\*
   5. Components of the Computer System
   6. Software Generations
   7. System Software and Application Software\*
3. Data Representation and Computer Arithmetic
   1. Number Systems and Conversion
   2. Binary Arithmetic And Complements
   3. Fixed and Floating Point Numbers
   4. Units of Data Representation and Coding Methods
   5. Boolean Algebra and Logic Circuits\*
4. Computer Organization & Architecture
   1. Microcomputer Architecture
   2. Computer Program execution process and the CPU organization
   3. Hierarchical Organization of the Computer System
   4. The Operating System Functions and components\*
   5. Programming Languages and Programming Paradigms\*
5. Business Process Engineering
   1. Steps in Software Systems Development
   2. Phases of SDLC
   3. SDLC Models
6. Data Communications and Computer Networks
   1. Data Transmission Concepts
   2. Data Transmission Software
   3. Data Communication Channels and Technologies
   4. Types of Computer Networks
   5. Network Topologies
   6. Networking Components (Devices, Software, …)
7. Internet, Intranet and Extranet
   1. History
   2. How it works
   3. Electronic Communication tools (e-services)
   4. Services (www, Telnet, email, ftp, IRC, internet telephony, …)
   5. Cloud Computing\*
8. Future Trends in ICT **[Reading Assignment]**
   1. Artificial Intelligence
   2. Ubiquitous (Pervasive) Computing
   3. Grid Computing
   4. Internet of Things