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| **Course Code** | CS211 Credit Hours **5** |
| **Course Title** | ICT Fundamentals |
| **Programme** | B. Sc. In Computer Science |
| **Course Description** | This course introduces the concept of ICT and its application in the wide range of everyday life and our work environment. It addresses concepts related to the components of a computer system, numbering systems, computer networking, computer security issues, 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 technology. |
| **Objectives** | Upon successful completion of this course students are expected to:   * Define Information, and Information Communications Technology * Define Types & Characteristics of Information * Identify the characteristics of computers and their applications * 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 the fundamental concepts of operating systems * 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 * 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% * Lab: 20% * Test and/or Quiz: 20% * Final Exam: 50% |
| **Term - Year** | * Autumn 2017 |
| **Instructor** | Abdella Endris / |

**COURSE CONTENT**

1. Introduction
   1. Overview of ICT and CS
   2. Knowledge Hierarchy and Its Management
   3. Components of Information Systems
   4. Applications of ICT/IS/Computers
   5. Information Systems in Business
   6. Why Study Computer Science?
2. Computer Hardware and Software Progression, and Computer Architecture
   1. Evolution of Computers
   2. Computer Generations
   3. Types and Characteristics of Computers
   4. Software Generations
   5. System Software and Application Software
   6. Microcomputer Architecture
3. Data Representation and Computer Arithmetic
   1. Number Systems and Conversion
   2. Units of Data Representation and Coding Methods
   3. Binary Arithmetic And Complements
   4. Fixed and Floating Point Numbers
   5. Boolean Algebra and Logic Circuits \*
4. Programming Languages
   1. Instructions and Programs
   2. Types of Programming Languages
   3. Introduction to the Basic Functions of Operating Systems \*
5. Business Process Engineering
   1. Steps in Computer Program Development
   2. Phases of SDLC
   3. SDLC Models
6. Data Communications and Computer Networks
   1. Data Transmission
   2. Types of Networks
   3. Network Topologies
   4. Networking Components (Devices, Software, …)
   5. Distributed Systems \*
   6. Introduction to Computer & Information Security Issues \*
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