Course Outline

Program	B. Sc. In Computer Science
Course Code / Title	CS211 / **ICT Fundamental**
Year / Term	2021 / Autumn
Instructor	Behailu Getachew (Assi. Prof.)
Course Description	This course introduces ICT in terms of computing system and its application in the wide range of our everyday life and work environment. It defines ICT, computers, and Knowledge hierarchy, and common terminologies.. The lessons describes the operations and components of computer system with examples. Further, it elaborates types of computer communication by focusing on the current modern computer types. Features and characteristics of Computers, Software Development process, Network such as LANs, MANs WANs, and the Internet and Intranets are explained with examples. It also covers data representation, overview Computer security, introducing Database and future generations aspects.
Objectives	Upon successful completion of the course students are expected to: • Define ICT and computer • Identify the characteristics of computer and their applications • Identify the different types of computers • Identify the main hardware components of a computer system • Identify the various phases of system development • Identify and describe different types of computer software • Understand the various data representation techniques and computer arithmetic • Define computer networking and their types • Understand issues related to computer security and privacy and the protection techniques and a short descriptions with examples for encryption algorithm • Identify major trends in ICT Computing.
Text Book	***No text book***
Reference	• Introduction to computers and Information Technology Student Book, By Emergent Learning • Introduction to computers 2018 Edition, By Darrell Hajack and Cesar Herrera. • Introduction to computing System From Bits and Gates to C and Beyond, By Yalee N. Patt and Sanjay J. Patel • Introduction to computers 2020 Edition, By Darrell Hajack and Cesar Herrera. • 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, • http://www.ccs.neu.edu/home/perrolle/book/menu.html • Computer Science an overview. Fifth edition by J.Glenn bvrookshera

	And related Journal Articles and Internet Sources.
Assessment Method	• Individual and group assignments: 20% • Test, Lab and/or Quiz: 30% • Final Exam: 50%

COURSE CONTENT

Lesson One: Introduction to Computers`
- 1.1 Define ICT and Computer?
- 1.2 Knowledge Hierarchy
- 1.3 Operations and Components of Computer System
  - 1,3,1 Hard ware
  - 1.3.2 Software
  - 1.3.3 Data
  - 1.3.4 User

Lesson Two: Features and Characteristics of Computers
- 2.1 Features of Computer System
- 2.2 Features' Characteristics
  - 2.2.1 Speed, Size and Cost
  - 2.2.2 Accuracy and Reliability
  - 2.2.3 Vast Storage Capacity
  - 2.2.4 Automatic
  - 2.2.5 Diligent
  - 2.2.6 Versatile
  - 2.2.7 Non-intelligent
- 2.3 What computer can do?
- 2.4 What computer can not do?

Lesson 3: Software Development Process
- 3.1 Problem solving Processes
- 3.2 Define and describe Algorithm as solution
- 3.3 Life Cycle of A Program
  - 3.3.1 Software and Program
  - 3.3.2 Programming Languages
- 3.4 Algorithm Design: Flowchart
- 3.3 Challenges : Example
- 2.4 *History of Computers and Software Generation

Lesson 4: Networks: LANs, WANs and Internet
- 4.1 Define the term Networks?
- 4.2 Examples of WANs, Internet and Intranet
- 4.2. Types of Network
- 4.3 Components of Data Communication System
- 4.4 Types of Data Flow Communication
- 4.5 Computer Network Topology
- 4.6 Classes of Transmission Medium
- 6.7 Client Communication : Web Browser

Lesson 5: Data Representation and Computer Arithmetic

- 5.1 Number Systems and Conversion
- 5.2 Units of data representation and coding methods
- 5.3 Binary arithmetic and complements
- 5.4 Fixed and floating point numbers
- 5.5 * Boolean Algebra and Logic Circuits

Lesson 6: Computer Security

- 6.1 Overview
- 6.2 Basic Term Definitions
- 6.3 Cyber Crime Prevention
- 6.4 Security Principles
- 6.5 Fundamental Security Algorithms

Lesson 7: Database Management System

- 7.1 What are Database and DBMS?
- 7.2 Data Concepts and Characteristics
- 7.3 Database Models
- 7.4 Working with Database
- 7.5 Query By Examples

Lesson 8: Future Generation Technologies

- 8.1 Define the term Computing?
- 8.2 Classes of ICT Computing?
- 8.3 Grid Computing
- 8.4 Cloud Computing
- 8.5 Containerization