**ADDIS ABABA SCIENCE AND TECHNOLOGY UNIVERSITY**

**DEPARTMENT OF CSIT/For software Engineering program**

**COURSE OUTLINE**

**Course Title:** Introduction to Computing and Software Engineering (SE 1011)

**Course Code**: **SE1011**

**Credit Hrs**: **4**

**Lecture Hrs**: **2**

**Instructor: Tesfaye M.**

1. **Course Description**

This course is intended to equip students with theoretical and practical aspects of fundamentals of Computer Science and software engineering by furnishing them with a broad oversight of the discipline of formal computer science and software engineering.

Broadly speaking, it introduces students to:

* the definition of algorithms, computer science and software engineering as a discipline.
* basic software engineering concepts.
* significantly explain the computer system
* represent data in a computer system
* Be able to basic concepts of Boolean algebra and its computation
* provide an insight to the basic science of computer architecture
* data communication, computer networks and its security
* Grasp about an algorithm and its development
* Explain steps in the System Development Life Cycle (SDLC)

1. Course Contents

**Chapter 1: Overview of Computers and the Computer System**

* 1. Overview of Computers
  2. The Computer System
     1. Computer hardware
     2. Computer software

**Chapter 2: Introduction to computing and software engineering**

* 1. Introduction
  2. Computer science and IT as disciplines
  3. Software engineering as a discipline

**Chapter 3: Data representation**

* 1. The number system
  2. Conversion from one base to another
  3. Encoding
  4. Binary arithmetic
  5. Units of data representation
  6. Character representation
  7. Integer representation
  8. Floating point numbers representation
  9. Negative numbers representation
  10. Complements

**Chapter 4: Computer System Architecture**

* 1. Hierarchical structure of computer system architecture
  2. Logic element and Boolean Algebra
  3. Construction of Logical Circuit
  4. Types of circuit
  5. Combinational and Sequential Circuit

**Chapter 5: Data Communication, Computer Networks and Computer security**

* 1. Data transmission
     1. Data communication & Importance of Networking
  2. Types of networks
  3. The Internet
  4. Network Devices
  5. Computer security threats

**Chapter 6:** Problem Solving Using Computers

6.1The System Development Life Cycle (SDLC)

* 1. Steps in program development
  2. Types of programming language
  3. Translation of programming code (interpreters and compilers)
  4. Algorithms

1. **References**
2. **D**ida Midekso, Introduction to computer Science: Addis Ababa University
3. ITL ESL , Introduction to computer science , Pearson edition ,2004
4. Schaum’s ouline series, Principles of Computer Science,2008
5. Kenneth C Laudon, Carol Guercio Traver, Jane Price laudon : information technology and society, second edition, 1996
6. William Stallings: Computer Organization and Architecture, 5/E, 6/E, Prentice Hall, 2003
7. Donald H. Sandar: computer concepts and applications; USA; Von Hoffman press, 1987
8. **Evaluation:**
9. **Continuous:** Tests=25-30%, Assignments=5-10% , Lab Exam =15%
10. Written Final Examination= 50%