Course Title: Introduction to Computing Science
Course Code: CoSc 201
Credit hour: 4
Prerequisites: none

COURSE DESCRIPTION:

The course introduction to computer science highlights the major development of the discipline over the past fifty years. It covers the historical development, the different classification of computers. It also covers both the hardware and software components of a computer system and how numbers are represented inside the computer. Finally, it introduces some basic concepts and theories of system development from a problem-solving point of view. Some basic implementation of mathematical concepts and formula will be done using the C programming language.

COURSE OBJECTIVE

- Explain the evolution of computers
- Explain the various application of computers
- Express numbers using different representations
- Identify the basic components of a computer system
- Demonstrate how data is manipulated by a computer
- How simple problems are studied and implemented using computers

Course Content

Chapter 1. Introduction
- 1.1 Introduction
- 1.2 Sub-disciplines of computer science
- 1.3 Need for studying computer science
- 1.4 Introduction to computer system

Chapter 2: Computer System and Its Evolutions
- 2.1. The basic units of computer system
- 2.2. Types of computers
- 2.3. Characteristics of a computer
- 2.4. Generation of computers
- 2.5. Application of computers

Chapter 3: Computer Software
- 3.1 Types of software
  - 3.1.1 System software
    - 3.1.1.1 Operating system
      - 3.1.1.1.1 Types of operating system
      - 3.1.1.1.2 Functions of operating system
    - 3.1.1.2 Programming languages
      - 3.1.1.2.1 Types of programming languages
    - 3.1.1.3 Translators
      - 3.1.1.3.1 Compiler
      - 3.1.1.3.2 Interpreter
      - 3.1.1.3.3 Assembler
  - 3.2 Application Software

Chapter 4: Computer Number System
- 4.1 Data types
- 4.2 Binary number system
- 4.3 Octal number system
- 4.4 Decimal number system
- 4.5 Hexadecimal number system
- 4.6 Conversion among the number systems

Chapter 5: Computer Arithmetic
- 5.1 Bytes and words
- 5.2 Binary Arithmetic
  - 5.2.1 Addition
  - 5.2.2 Subtraction
  - 5.2.3 Multiplication
  - 5.2.4 Division
- 5.3 Complements
  - 5.3.1 Binary complements
  - 5.3.2 Decimal complements
- 5.4 Subtraction by use of complements
- 5.5 Integer representations
- 5.6 Floating point representation

Group Presentation: Computer Codes

BCD code
EBCDIC Code
ASCII Code
Unicode

Chapter 6: System Development

- 6.1 Introduction to system development
- 6.2 Problem solving and development
  - 6.2.1 Algorithm
  - 6.2.2 Flowchart
  - 6.2.3 Pseudocode programs

Chapter 7: Introduction to C

- 7.1. Introduction to computer programming
  - 7.1.1. What is C
  - 7.1.2. Features of C
  - 7.1.3. C program structure
- 7.2. Fundamentals of C++
  - 7.2.1. Syntax and semantics
  - 7.2.2. Variable naming conventions
  - 7.2.3. Data types
  - 7.2.4. Basic input-output statements
  - 7.2.5. Basic program control statements

Methods of Assessment

Assessment Method	Weight
Quiz (1)	10
Test (1)	10
Presentation (1)	10
Mid Exam	30
Final exam	40

Delivery Methods:

- Lectures
- Demonstrations and Discussions
- Reading and Programming Assignments
- Laboratory Sessions

References:

- An Introduction to Programming with C+ 8th edition, Diane Zak
- Introduction to Programming Languages, Programming in C, C++, Scheme, Prolog, C#, and SOA 5th Edition, Yinong Chen, Arizona State University
- Sebesta, Robert, Concepts of Programming Languages, 4th ed. Pearson, New Delhi, 2001
- Tucker, Allen, Programming Languages Principles and Paradigms, McGraw-Hill, N.Delhi, 2002
- Gundurao, H. K.,Computer Technology and Programming, Himalaya, New Delhi, 2004
- Dawra, Sudhir, Computer Programming in Computer, Anmol, New Delhi, 2003
- Deitel Detiel, Computer How to Program: Introducing C++ and Java, Prentice-Hall New Delhi, 2003
- Dida Mideksa, Introduction to Computer Science, AAU, A.A, 2001
- Nagpal, D.P., Computer Fundamentals: Concepts, Systems Applications, S.Chand, New Delhi 2004
- Norton`s Peter, Introduction to Computers, 4th ed, McGraw-Hill, New Delhi, 2001
- Rajaraman, V. Computer Programming in C, Prentice-Hill, New Delhi, 2001

Gersting, Judith L., Mathematical Structures for Computer Science, 5th ed, W.H. Freeman