COMPUTER SCIENCE
Grade XI
(Subject Code: 130)

Full Marks: 100 (75T+25P)
Teaching Hours: 150

I. Introduction:

Information Technology has become a part of contemporary society and as a potential tool in the socio-economic development of country. As Information technology manpower is the backbone for the rapid development of ICT sector in the country, government of Nepal has accordingly identified IT as a priority sector. Keeping in view the importance of computer technology in general and indispensability of its knowledge and skill to the society in general and to the students of higher secondary level in particular, the course seeks to introduce computer science to acquaint the learner with the basic skills of computer literacy.

II. General Objective:

The general objectives of this course are to:

1. help establish a strong foundation for the development of internationally competent human resources in the field of Information Communication and Technology;
2. help decrease the digital divide; and
3. fulfill the middle level ICT Human Resources to the ICT industries.

III. Specific Objective:

After completing this course, the student will be able to:

1. explain the fundamental principle of computer system mechanism and Information and Communication Technology;
2. identify computer recourse for any specific purpose PC based application in the real life situations;
3. solve the office automation related system problems, general skill about network, internet, email and web site design;
4. provide computing knowledge and skill to individuals or organization;
5. engage in higher study of computer science and information technological course in the country or aboard;
6. provide the services as instructor of computer sciences course in schools or institutions;
7. state programming concept and tools;
8. explain the state-of-art information technology and works to change agents for spreading ICT culture in their society; and
9. encourage the student for visit the hardware and software industries, e-communities centers.

IV. Course Contents:

UNIT-1 Introduction and Evolution of Computer

1.1 Concept and Characteristics of Computer
1.2 Application of Computers
1.3 History of Computer: Mechanical Calculating era, Electro-Mechanical era, Electronic computers era
1.4 Generation of Computers: First, Second, Third, Fourth and Fifth Generation(AI) and its features
1.5 Computer speed and Measurement Unit

UNIT-2 Classification of Computer

2.1 On the basis of working principle – Analog, Digital and Hybrid Computers
2.2 On the basis of size – Super, Mainframe, Mini and Microcomputers
2.3 On the basis of brand – IBM PC, IBM Compatible and Apple/Macintosh
2.4 Mobile Computing

UNIT-3 Number System and Their Conversion

3.1 Decimal, Binary, Octal, Hexadecimal Number System & conversion
3.2 9's and 10's complements decimal subtraction
3.3 Calculation in Binary – addition, subtraction, One's and Two's Complement Methods of binary subtraction

UNIT-4 Logic Function and Boolean Algebra

4.1 Logic Function and Boolean Algebra
4.2 Introduction of Truth Table, Boolean Expression
4.3 Logic Gates –AND, OR, NOT, NAND, NOR, XOR and XNOR – its definition, use, truth table, logic symbol
4.4 Duality Principle
4.5 Laws of Boolean Algebra – Associative, Commutative, Distributive, Identity, Complement Laws
4.6 De Morgan's Theorem : Statement and Logic Expression
4.7 Venn diagram and its represent of logic gates(AND, OR, NOT)

UNIT-5 Computer Systems

5.1 Concept of Computer Architecture
5.2 Concept of Computer Organization
5.3 Components of Computer System – Input, Output, Processor and Storage
5.4 Microprocessor – Concepts, Components of Processor, Functions
5.5 Concept of System Buses: Data Bus, Address Bus, Control Bus
5.6 Memory – Primary and Secondary, Cache(L1, L2), Buffer, RAM, ROM
5.7 Storage Device – Definition, Use, Types: Hard Disk , Floppy Disk, Magnetic Tape, Flash Memory, Optical Disk(CD,VCD,DVD), External Storage Device
5.8 Input Devices – Keyboard, Mouse, Scanner, Light Pen, OMR, OCR, BCR, Scanner, Touch Pad Kiosk, Microphone and Digital Camera
5.9 Output Devices – Monitor, Printer, Plotter, Speaker
5.10 Computer Peripherals

5.11 Interfaces – Parallel Port, Serial Port, USB Ports, IEEE 1394 and Slots
5.12 Identification of PC Accessories and Peripherals
5.13 Specification of PC
5.14 Software and Classification
- 5.14.1 System software: OS, Language processor
- 5.14.2 Application software including Utilities Software
- 5.14.3 Computer Virus and Antivirus

UNIT-6 Operating System

6.1 Fundamental Concept
- 6.1.1 Introduction to Operating System
- 6.1.2 Role of Operating System
- 6.1.3 Functions of an Operating System
- 6.1.4 Types of Operating System: Based on Processing Method (Batch, Multitasking, Multiprocessing, Timesharing, Real Time), Based on User Interface (GUI, CUI), Based on Mode of User (Single-user & Multi-user)

6.2 Disk Operating System (DOS)
- 6.2.1 Introduction to CUI and it's feature
- 6.2.2 Common DOS Commands (External and Internal Commands)
- 6.2.3 Concept of File and Directory
- 6.2.4 Wildcards and Pathname
- 6.2.5 System Files: Config.sys, IO.sys, MSDOS. sys, autoexec.bat

6.3 Windows Operating System
- 6.3.1 Introduction to GUI and its features
- 6.3.2 Working with a Window Environment
- 6.3.3 Working with a Windows Application Program
- 6.3.4 Working with Files and Folders
- 6.3.5 Customizing the Taskbar and Desktop
- 6.3.6 Customizing Windows
- 6.3.7 Use of Accessories

6.4 **Concept of Open Sources Operating System**
- 6.4.1 Introduction to Open Sources Operating System
- 6.4.2 Introduction to Linux, UNIX

UNIT-7 Programming Concepts & Logics

7.1 Programming Languages(Low level, High level, 4 GL)
7.2 Compiler, Interpreter and Assembler
7.3 List of high level Programming Language
7.4 Difference between Program and Software
7.5 Concept of Programming Statement
7.6 Syntax and Semantics errors
7.7 Program Control Structures: Sequence, Selection and Iteration.
7.8 Program Design tools – Algorithm, Flowchart and Pseudo code
7.9 Introduction to Data Type

7.10 Codes: Absolute Binary, BCD, ASCII ,EBCDIC, Unicode

UNIT-8 Application Package

8.1 Word Processor

- 8.1.1 Concept of Word Processor
- 8.1.2 Types of Word Processing
- 8.1.3 Basic terms of word processing
- 8.1.4 Working and Editing Text
- 8.1.5 Formatting Characters and Paragraphs
- 8.1.6 Formatting Pages
- 8.1.7 Working with Tables
- 8.1.8 Working with Templates and Styles
- 8.1.9 Drawing and Working with Graphics
- 8.1.10 Performing a Mail Merge
- 8.1.11 Document Collaboration
- 8.1.12 Working with Outlines and Long Documents
- 8.1.13 Working with WordArt and Charts
- 8.1.14 Project Work on Word Processor

8.2 Spread Sheet

- 8.2.1 Concept and Use of Spread Sheet
- 8.2.2 Types of Spread Sheet
- 8.2.3 Basic fundamentals of Spread Sheet
- 8.2.4 Formatting a Worksheet
- 8.2.5 Creating and Working with Charts
- 8.2.6 Managing Workbooks
- 8.2.7 General Functions and Formulas
- 8.2.8 Data Filter and sorting
- 8.2.9 Working with Other objects
- 8.2.10 Data Analysis and PivotTables
- 8.2.11 What-If Analysis
- 8.2.12 Project Work on Spread Sheet

8.3 Presentation

8.3.1 Concept of Presentation
8.3.2 Types and use of Presentation Program
8.3.3 Basic fundamental of Presentation
8.3.4 Editing a Presentation
8.3.5 Design and Formatting Presentation
8.3.6 Transition of Presentation
8.3.7 Animation and Custom Animation
8.3.8 Working with Tables, Graphics and WordArt
8.3.9 Working with Graphs and Organization Charts
8.3.10 Working with Multimedia
8.3.11 Project Work on Presentation

UNIT- 9 Internet and E-mail

9.1 Internet

- 9.1.1 Introduction of Internet
- 9.1.2 Uses of Internet:
- 9.1.3 Concept of Protocols
- 9.1.4 Web Browser, Web Page, Website, Web Server, URL, DNS
- 9.1.5 Search Engine, Messenger Services
- 9.1.6 Setting Browser Properties
- 9.1.7 Setup Network Connection

9.2 E-mail

- 9.2.1 Concept of E-mail
- 9.2.2 Uses of E-mail
- 9.2.3 Different types of E-mail Account
- 9.2.4 Web Based E-mail and POP E-mail

Unit- 10 Web Page Designing

10.1 Introdution to HTML
10.2 Types of Tags
10.3 Basic Structure of HTML
10.4 Character Formatting (Paragraphs, Heading, Text format)
10.5 Create an Ordered and Unordered List
10.6 Insert Images and Objects
10.7 Create Hyper Link
10.8 Create Table
10.9 Design Frames and Form
10.10 Concept of CSS and Script Language
10.11 Webpage Design and Editing Tools
10.12 Project Work on Web Page

UNIT-11 Final Project Work

11.1 Project Work on Webpage or Spread Sheet
11.2 Documentation of the Project

Reference books:

1. Gurung, J. B.; Baskota, A; Baral, D.S.; Baral, D.; Niroula, R.; Dhakal, T.P.
2. (2008), A Text Book on Computer Science Part-A Second Edition,
3. Kathmandu: Bhundipuran Prakashan.
4. Subba, B.R., Computer Science Grade-XII, Kathmandu: Taleju Prakashan.
5. Khanal, R. C. (2007), Computer Practical Volume-I, Kathmandu: Ekata
6. Publication.
7. Pudasaini, D.Shakar; Adhikari, N., A Text Book on Computer Science Grade
8. XI, Kathmandu: Buddha Academic Enterprises Pvt. Ltd.
9. Basandra, S. K. (2008), Computers Today Updated Edition, Galgotia

10. Publication.
11. Leon, Alexis and Leon, Mathews, Fundamental of Information Technology,
12. New Delhi: Vikash Publishing Houses.
13. Sinha, P. K. (2003), Computer Fundamentals (Cd) 4th Edition, BPP
14. Publication.
15. Rajaraman, V. (2007), Fundamental of Computer, Prentics Hall, Fourth
16. Edition.