

**COMPUTER SCIENCE  
GRADE-XI**

**Full Marks: 100 (75T+ 25P)**

**Teaching Hours: 150**

**IV Course Contents:**

- UNIT-1 Introduction and Evolution of Computer** (3 hrs)
- 1.1. Concept and Characteristics of Computer
- Define computer with IPO
  - characteristics of Computer (Speed, Storage, Diligence, Versality, Electronics, Automatic and Accuracy, Non-intelligent)
- 1.2. Application of Computers
- Science and Engineering
  - Education and Resarch
  - Business and Industries
  - Entertainment
  - Banking etc (Unit 1.1 and 1.1: 1 hr)
- 1.3. History of Computer: Mechanical Calculating era, Electro-Mechanical era, Electronic computers (1 hr)
- 1.4. Generation of Computers: First, Second, Third, Fourth and Fifth Generation(AI) and its features,
- 1.5. Computer speed and Measurement Unit (Unit 1.4 and 1.5: 1 hr)
- UNIT-2 Classification of Computer** (5 hrs)
- 2.1 On the basis of application – Analog, Digital and Hybrid Computers. (1 hr)
- 2.2. On the basis of size – Super, Mainframe, Mini and Microcomputers. (2 hrs)
- 2.3. On the basis of brand – IBM PC, IBM Compatible and Apple/Macintosh. (1 hr)
- 2.4. Mobile Computing (1 hr)
- UNIT-3 Number System and their conversion** (5 hrs)
- 3.1. Decimal, Binary, Octal, Hexadecimal Number System and Conversion (4 hrs)
- 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. (1 hr)
- UNIT-4 Logic Function and Boolean Algebra** (10 hrs)
- 4.1. Logic Function and Boolean Algebra (0.5 hr)
- 4.2. Introduction of Truth Table, Operators and Operands. (0.5 hr)
- 4.3. Logic Gates –AND, OR, NOT, NAND, NOR, XOR and XNOR – its definition, use, truth table, logic symbol. (3 hrs)
- 4.4. Duality Principle (1 hr)
- 4.5. Laws of Boolean Algebra – Associative, Commutative, Distributive, Identity, Complement Laws. (2 hrs)
- 4.6. De Morgan's Theorem : Statement and Logic Expression (1 hr)
- 4.7. Venn diagram and its represent of logic gates(AND, OR, NOT) (2 hrs)
- UNIT-5 Computer Systems** (15 hrs + 2 hrs))
- 5.1. Concept of Computer Architecture (0.5 hr)
- 5.2. Concept of Computer Organization (0.5 hr)
- 5.3. Components of Computer System – Input, Output, Processor and Storage. (2 hrs)
- 5.4. Microprocessor – Concepts, Components of Processor, Functions. (1 hr)
- 5.5. Concept of System Buses: Data Bus, Address Bus, Control Bus. (1 hr)
- 5.6. Memory – Cache(L1, L2), Buffer, RAM, ROM (1.5 hr)

- 5.7.Storage Device – Definition, Use, Types: Hard Disk , Floppy Disk, Magnetic Tape, Flash Memory, Optical Disk(CD,VCD,DVD), External Storage Device (1.5 hr)
- 5.8. Input Devices – Keyboard, Mouse, Scanner, Light Pen, OMR, OCR, BCR, Scanner, Touch Pad Kiosk, Microphone and Digital Camera. (1 hr)
- 5.9. Output Devices – Monitor, Printer, Plotter, Speaker (1 hr)
- 5.10. Computer Peripherals. (0.5 hr)
- 5.11. Interfaces – Parallel Port, Serial Port, USB Ports, IEEE 1394 and Slots (1 hr)
- 5.12. Identification of PC Accessories and Peripherals (1 hr)
- 5.13. Specification of PC (0.5 hr)
- 5.14. Software and Classification (2 hr)
  - 5.14.1. System software: OS, Language processor
  - 5.14.2. Application software including Utilities Software
  - 5.14.3. Computer Virus and Antivirus

(Practical Unit 5.8 and 5.9: 0.5 hr, Unit 5.12: (1 hr), Unit 5.13: 0.5hr)

## **UNIT-6 Operating System** (10 hrs +20 hrs)

### **6.1 Fundamental concept** (4 hrs)

- 6.1.1 Introduction to Operating System
- 6.1.2 Role of Operating System (Unit 6.1.1 and Unit 6.1.2: 1 hr)
- 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) (Unit 6.1.3 and Unit 6.1.4: 3 hr)

### **6.2 Disk Operating System(DOS)** (3 hrs)

- 6.2.1 Introduction to DOS
- 6.2.2 Common DOS Commands(External and Internal Commands) (Unit 6.2.1 and Unit 6.2.2: 2 hrs)
- 6.2.3 Concept of File and Directory
- 6.2.4 Wildcards and Pathname
- 6.2.5 System Files : Config.sys, IO.sys, MSDOC.sys, autoexec.bat (Unit 6.2.3 to Unit 6.2.5: 1 hr)

### **6.3 Windows operating system** (2 hrs)

- 6.3.1 Introduction to GUI and its features
- 6.3.2 Working with a Window
- 6.3.3 Working with a Windows Application Program
- 6.3.4 Working with Files and Folders (Unit 6.3.1 to Unit 6.3.4: 1.5 hr)
- 6.3.5 Customizing the Taskbar and Desktop
- 6.3.6 Customizing Windows
- 6.3.7 Use of Accessories (Unit 6.3.5 to Unit 6.3.7: 0.5 hr)

### **6.4 Concept of Open sources operating system** (1.hr)

- 6.4.1 Introduction to Open Sources Operating System
- 6.4.2 Introduction to Linux, UNIX

(Practical Unit 6.2: 10 hrs, Unit 6.3: 10 hrs)

## **UNIT-7 Programming Concepts & Logics** (10 hrs)

- 7.1 Programming Languages: Low level, High level, 4 GL (2 hrs)
- 7.2 Compiler, Interpreter and Assembler
- 7.3 List of high level Programming Language
- 7.4 Difference between Program and Software (Unit 7.2 to Unit 7.4: 1 hr)
- 7.5 Concept of Programming Statement

- 7.6 Syntax and Semantics (Unit 7.5 and Unit 7.6: 1 hr)
- 7.7 Program Control Structures: Sequence, Selection and Iteration. (2 hrs)
- 7.8 Program Design tools – Algorithm, Flowchart and Pseudocode
- 7.9 Introduction to Data Type (Unit 7.8 to Unit 7.9: 3 hrs)
- 7.10 Codes: Absolute Binary, BCD, ASCII, EBCDIC, Unicode (1 hr)

## **UNIT-8 Application Package**

**(10 hrs + 22 hrs)**

### **8.1 Word Processor**

**(18 hrs)**

- 8.1.1. Concept of Word Processor
- 8.1.2. Types of Word Processing
- 8.1.3. Basic terms of word processing  
(Unit 8.1.1 to Unit 8.1.3 1hrs)
- 8.1.4. Working and Editing Text
- 8.1.5. Formatting Characters and Paragraphs
- 8.1.6. Formatting Pages (Unit 8.1.4 to Unit 8.1.6 4hr)
- 8.1.7. Working with Tables
- 8.1.8. Working with Templates and Styles (Unit 8.1.7 and Unit 8.1.8 3hrs)
- 8.1.9. Drawing and Working with Graphics (2hrs)
- 8.1.10. Performing a Mail Merge and Macro (3hrs)
- 8.1.11. Document Collaboration (1 hr)
- 8.1.12. Working with Outlines and Long Documents
- 8.1.13. Working with WordArt and Charts Unit 8.1.12 and Unit 8.1.13: 2hrs)
- 8.1.14 Project Work on Word Processor (2 hrs)

### **8.2 Spread Sheet**

**(9 hrs)**

- 8.2.1. Concept and Use of Spread Sheet
- 8.2.2. Types of Spread Sheet
- 8.2.3. Basic fundamentals of Spread Sheet Unit 8.2.1 to Unit 8.2.3: 1hr)
- 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 Unit 8.2.4 to Unit 8.2.7: 3hrs)
- 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 Unit 8.2.8 to Unit 8.2.11: 2hrs)
- 8.2.12. Project Work on Spread sheet (3 hrs)

### **8.3 Presentation**

**(5 hrs)**

- 8.3.1. Concept of Presentation
- 8.3.2. Types and use of Presentation Program
- 8.3.3. Basic fundamental of Presentation Unit 8.3.1 to Unit 8.3.3: 1hr)
- 8.3.4. Editing a Presentation
- 8.3.5. Design and Formatting Presentation
- 8.3.6. Transition of Presentation Unit 8.3.4 to Unit 8.3.6: 1hr)
- 8.3.7. Animation and Custom Animation
- 8.3.8. Working with Tables, Graphics and WordArt Unit 8.3.7 and Unit 8.3.8: 1hr)
- 8.3.9. Working with Graphs and Organization Charts
- 8.3.10. Working with Multimedia
- 8.3.11 Project Work on presentation` Unit 8.3.9 to Unit 8.3.11: 2hrs)

## **UNIT- 9 Internet and E-mail**

**(10+16)**

### **9.1 Internet**

**(6 hrs)**

- 9.1.1 Introduction of Internet

- 9.1.2 Uses of Internet: Unit 9.1.1 to Unit 9.1.2: 2hrs)
- 9.1.3 Concept of Protocols (1 hr)
- 9.1.4 Web Browser, Web Page, Website, Web Server, URL, DNS (1 hr)
- 9.1.5 Search Engine, Messenger Services
- 9.1.6 Setting Browser Properties
- 9.1.7 Setup Network Connection Unit 9.1.5 to Unit 9.1.7: 2hrs)

**9.2 E-mail (4 hrs)**

- 9.2.1 Concept of E-mail
- 9.2.2 Uses of E-mail Unit 9.2.1 to Unit 9.1.2: 1hrs
- 9.2.3 Different types of E-mail Account
- 9.2.4 Web Based E-mail and POP E-mail Unit 9.1.3 to Unit 9.1.4: 3hrs  
(Practical: 16 hrs)

**Unit 10 Web Page Designing (5 hrs+7 hrs)**

- 10.1 Introduction to HTML
- 10.2 Types of Tags
- 10.3 Basic Structure of HTML Unit 10.1.1 to Unit 10.1.3: 1hr
- 10.4 Character Formatting(Paragraphs, Heading, Text format) Create an Ordered and Unordered List
- 10.5 Insert Images and Objects
- 10.6 Create Hyper Link
- 10.7 Create Table Unit 10.1.4 to Unit 10.1.7: 2hrs
- 10.8 Design Frames and Form
- 10.9 Concept of CSS and Script
- 10.10 Webpage Design and Editing Tools Unit 10.1.8 to Unit 10.1.10: 1hr
- 10.11 Project work on Web Page (7 hrs)

**UNIT-11 Final Project Work**

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

**V. Instructional Materials:**

- To be guided by Teaching Manual

**VI. Instructional Techniques:**

- To be guided by Teaching Manual

**VII. Evaluation Schemes:**

**a) Theory Evaluation:**

- Short Question
- Long Question
- Short Notes

Theory Questions are guided by marks distribution and model question

**b) Practical Evaluation:**

S. No.	Unit	Topics	No of Exercise	Mini Projects Evaluation	Remarks
1	5	PC Component Identification	2	-	Practical Marks Evaluated By: External Examiner: 10 Internal Examiner: 15 Based on Mini Project, Lab Exercise and Final Project
2	6.3	Operating System(Windows)	4	-	
3	8.1	Word Processor	6	5	
4	8.2	Spreadsheet	5	5	
5	8.3	Presentation	4	5	
6	9	Internet, Email	4	2	
7	10	Web Page	6	5	

		Designing (HTML)		
8	11	Final Project		

Lab Exercises are guided by marks distribution and Teaching Manual

### VIII. Marks and Teaching Hours distribution

Unit	Mark Distribution		Number of Hours	
	Theory	Practical	Theory	Practical
1	2		3	
2	3		5	
3	5		5	
4	5		10	
5	10		15	2
6	10	3	10	20
7	10		10	
8	15	15	10	22
9	10	5	10	16
10	5	2	5	7
11				
Total	75	25	83	67

### IX. Reference Books:

- Gurung J.B, Baskota A, Baral D.S., Baral D., Niroula R., Dhakal, T.P., *A Text Book on Computer Science Part-A Second Edition*, Bhundipuram Parkasan , Kathmandu, 2008
- Subba B.R., *Computer Science Class-XII*, Taleju Parkasan, Kathmandu
- Khanal R. C , *Computer Practical Volume-I*, Ekata Publication, Kathmandu, 2007
- Shakar N. Adhikari, *A Text Book on Computer Science Class XI*, Buddha Academic Enterprises Pvt. Ltd.
- Basandra S K, *Computers Today Updated Edition*, Galgotia Publication, 2008
- A lexis Leon & Mathews Leon, *Fundamental of Information Technology*, Vikash Publishing Houses , New Delhi
- Sinha P K, *Computer Fundamentals (Cd) 4th Edition*, BPP Publication, 2003
- V. Rajaraman, *Fundamental of Computer, Prentics Hall, Fourth Edition, 2007*
- URL: <http://www.w3.org/html/>
- URL: <http://en.wikipedia.org/>

Candidates are required to give their answers in their own words as far as practicable the margin indicate full marks.

**Group – A**  
**(Long Answer Questions)**

*Attempt all questions [3x10=30]*

1. Draw a well-labeled diagram of typical architecture of a computer system and explain the main function of Control Unit and ALU. [4+3+3]
  2. (a) What is an operating system? Explain any three functions of an operating system. [1+6]  
(b) The 'WiMP' environment is much more user-friendly why? [3]
- OR
- (a) What is cell addressing and explain different types of cell addressing used in Spreadsheet. [5]
  - (b) Explain about the following HTML tag with example: <A>, <input> [5]
3. (a) Define flow-chart and pseudo-code. Explain their significance in programming. [5]  
(b) Write a pseudo-code to accept any three numbers and output the largest among them. [5]

**Group – B**  
**(Short Answer Questions)**

*Attempt any Nine Questions [9x5=45]*

4. Classify the computers according to their generation based on the technology used. [5]
5. Differentiate between analogue and digital computer, explain with examples. [5]
6. What do you mean by number system? Why do digital computers use binary numbers for their operation? [2+3]
7. Convert these number [5]
  - a)  $(126)_{10} = (?)_2$
  - b)  $(11011)_2 = (?)_{10}$
  - c)  $(57)_8 = (?)_2$Perform following operations
  - d)  $1011 - 1001$
  - e)  $1110 + 1110$
8. State the Demorgan's theorem and verify it. [5]
9. What are logic gates? Construct the truth table of NOR operation. [5]
10. Write short notes on (any two): [5]
  - (i) IDE
  - (ii) SCSI
  - (iii) Wave Camera
11. What are uses of internet? Write any five search engine name. [5]
12. Differentiate between System Software and Application Software with examples. [5]
13. What are DTP features in MS-Word? Write three features of Presentation Packages. [2+3]
14. Write an algorithm and flow chart to print the word "Hello" ten times using "while loop" [5]