Pokhara University Faculty of Science and Technology		
Course Code: CMP 116 (3 Credits)		Full Marks: 100
Course Title: **Computer Fundamental and Application (3-3-2)**		Pass Mark: 45
Nature of the Course: Theory + Practical		Total Lectures: 48 hours
Level: Bachelor	Year : I / Semester : I	Program: Bachelor of Computer Application

1. Course Description

This course is designed to conceptualize the computer fundamental knowledge and its application to solve the real-life problems. This course covers the concept of computer, computer organization, software, hardware, functional behavior of peripherals and important accessories, data communication, computer networks and burning technologies. In this syllabus unit I and II covers the fundamental concept of computer; unit III and VII covers the software, unit IV and V covers the hardware while unit VI and VIII covers the data sharing tools and trends. The course includes theoretical and practical implementation of software tools and applications.

2. Course Objectives

The general course objectives of this course are outlined as:

- To familiarize students with fundamental knowledge about computer system.
- To make the students understand software, hardware and their working procedure.
- To enhance students' knowledge about various components of computer.
- To train students about assembling and disassembling, general maintenance and networking of computers.

3. Methods of Instruction

The medium of instruction is English and the faculty members can apply the various tools and techniques for teaching methodologies. As per the student's ability subject teachers/faculties can use various teaching methodologies like Class Room/Lecture-based, Discussion-based, Project-based Learning(PBL), Problem-Based Learning, Flipped Classroom-based, Active Learning, Socratic Method, Cooperative Learning, Experimental Learning, Gamification, Inquiry-based Learning, Constructivist Approach, Collaborative Learning, Direct Instruction, Differentiated Instruction, Montessori Method, Reggio Emilia Approach, Waldorf Education, Peer Teaching etc. are called alternative method of teaching to motivate the students for learning. After completion of each unit, faculty members can evaluate the students theoretically and practically. They can conduct VIVA, Supervised test, Questionnaire test, Assignment test, Project work and Practical work, Terminal examination as per the requirement.

4. Course Contents

Specific Unit wise Objective	**Course Contents**
Unit 1: Introduction to Computer	**5 hours**
1) Explain the conceptual knowledge of computer with historical and generation background 2) Describe the types of computer with characteristics and applications	1.1 Definition 1.2 History of computer 1.3 Generation of computer 1.4 Types of Computer 1.5 Characteristics of computer 1.6 Applications of computer
Unit 2: Basic Organization of Computer	**4 hours**

1) Explain the organization of computer with their functional components 2) Describe the working mechanism of computer system	2.1 Basic function of computer 2.2 Basic functional organization of computer 2.2.1 Input unit 2.2.2 Output unit 2.2.3 Storage unit 2.2.4 Arithmetic and logic unit 2.2.5 Control unit 2.2.6 Central Processing Unit (CPU) 2.3 The system concept
Unit 3: Computer Software	**6 hours**
1) Describe the concept of computer software with their roles 2) Explain the software architectures their application	3.1 Introduction to software 3.2 Logical system architecture 3.3 Types of software 3.3.1 System Software 3.3.2 Application Software 3.3.3 Utility Software 3.4 Firmware 3.6 Middleware
Unit 4: Computer Accessories	**9 hours**
1) Familiarized with input and output accessories with their application 2) Identify the role of agronomical design in related devices	4.1 The Input Accessories 4.1.1 Keyboard Devices 4.1.2 Point and Draw Devices 4.1.3 Yoke 4.1.4 Data Scanning Devices 4.1.5 Digitizer 4.1.6 Microphone 4.1.7 Electronic Cards Based Devices 4.1.8 Speech Recognition Devices 4.1.9 Vision Based Devices 4.2 The Output Accessories 4.2.1 Monitor 4.2.2 Printer 4.2.3 Plotter 4.2.4 GPS 4.2.5 Projectors 4.2.6 Headphones 4.2.7 Soundcard/video Card 4.2.8 Speaker 4.2.9 Voice Response System 4.2.10 Computer Output Microfilm (COM) 4.2.11 SGD Speech Generation Device 4.3 Ergonomically Designed Devices
Unit 5: Storage Devices	**7 hours**
1) Describe the characters of primary and secondary storage devices 2) Explain the function and behavior of different types of memories .	5.1 Introduction 5.2 Types of Storage Devices 5.3 Cache memory 5.4 Registers 5.5 Primary Memory 5.5.1 Introduction 5.5.2 Characteristics of main memory 5.5.3 Types of primary memory 5.5.4 Difference between RAM and ROM, DRAM and SRAM, primary and secondary memory

	5.6 Secondary Memory 5.6.1 Introduction 5.6.2 Characteristics of secondary memory 5.6.3 Types of Secondary memory 5.6.4 Difference between Hard disk and SSD, magnetic and optical disk, direct and sequential access magnetic memory
Unit 6: Data Communication and Computer Network	**5 hours**
1) Interpret the method of data communication including transmission modes and media 2) Explain the relationship of computer network and topologies with their advantages and disadvantages 3) Compare the role of email and internet in modern life	6.1 Data Communication 6.1.1 Introduction 6.1.2 Basic Elements of a communication system 6.1.3 Data Transmission Modes (Simplex, Half Duplex, Full Duplex) 6.1.4 Data transmission Speed (Narrowband, Voice band, Broadband) 6.1.5 Data Transmission Media (Twisted-pair wire, coaxial cable, Optical fibers, Microwave system Communication satellite) 6.2 Computer Network 6.2.1 Definition 6.2.2 Types of Computer Network (PAN, LAN, CAN, MAN and WAN), Differences, advantages disadvantages 6.2.3 Network Topologies, advantages, disadvantages 6.2.4 Intranet, Extranet, Internet 6.2.5 E-mail
Unit 7: Operating System	**6 hours**
1) Explain the features of operating system and its historical background 2) Describe the functional and architecture behaviors of various type of OS. 3) Explain the different installation methods for operating system	7.1 Introduction 7.2 History and evolution of OS 7.3 Objective of OS 7.4 Generation of OS 7.5 Functions of OS 7.6 Types of OS 7.7 System architecture of OS 7.8 Different between GUI and TUI/CUI 7.9 The booting system 7.10 Windows/ Linux operating system, settings, properties and installation guides
Unit 8: AI and Emerging Technologies	**6 hours**
1. Familiarize with Artificial Intelligence and its applications. 2. Explain about emerging trends of technologies.	8.1 Introduction to AI 8.2 AI and its Applications 8.2.1 Natural Language Processing 8.2.2 Machine vision 8.2.3 Expert system 8.3 Machine Learning 8.4 Neural Networks 8.5 Blockchain technology 8.6 IoT 8.7 Cloud Computing 8.8 Cyber Security

5. Laboratory Work

A. Office Automation

a) Word-processing

1. Basic options of word-processing for typing, editing, formatting, margin setting, viewing, designing, printing a document.
2. Creating, insetting, editing, formulating table for word-processing
3. Document preparation with table, figure, page number, margin setting etc. and printing document as a report submission.

b) Spreadsheet

1. Preparing sheet for data processing like, arithmetic, logical and other types of functional operation
2. Preparing data table for calculation, analysis and creating various charts for presentation.
3. Inserting picture, table, graphs into word-processing
4. Printing documents after proper setting into the required format.

c) Presentation

1. Creating various types of slides with master slide for presentation
2. Setting the slide into the required format.

B. Email and Internet

1. Setting various kinds of email account and using them for personal and group purpose
2. Uploading and downloading the information form internet.

6. Evaluation System and Students' Responsibilities

Evaluation System

The internal evaluation of a student may consist of assignments, attendance, term-exams, lab reports and projects etc. The tabular presentation of the internal evaluation is as follows:

Internal Evaluation	**Weight**	**Marks**	**External Evaluation**	**Marks**
Theory		**30**	**Semester End**	**50**
Attendance & Class Participation	10%			
Assignments	20%			
Presentations/Quizzes	10%			
Internal Assessment	60%			
Practical		**20**		
Attendance & Class Participation	10%			
Lab Report/Project Report	20%			
Practical Exam/Project Work	40%			
Viva	30%			
Total Internal		**50**		
Full Marks: 50 + 50 = 100				

Students' Responsibilities

Each student must secure at least 45% marks separately in internal assessment and practical evaluation with 80% attendance in the class in order to appear in the Semester End Examination. Failing to get such score will be given NOT QUALIFIED (NQ) to appear the Semester-End Examinations. Students are advised to attend all the classes, formal exam, test, etc. and complete all the assignments within the specified time period. Students are required to complete all the requirements defined for the completion of the course.

7. Prescribed Books and References

Text Books

1. P.K. and Priti Sinha, *Foundations of Computing*, BPB Publications, Third Edition

References Books

1. A Text Book of Computer Fundamental and Application, OCEM Publication, (Second Edition), by Hari Bhandari
2. Computer Fundamentals, BPB Publications by V.K Jain
3. Fundamental of Computers, by Balagurusamy E., New Delhi: Tata McGraw Hill.