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EIILM University

**Directorate OF DISTANCE
LEARNING**

**SYLLABUS BOOKLET
Semester-I TO ii**

DIPLOMA IN COMPUTER Application

SCHEME OF EXAMINATIONS DIPLOMA IN COMPUTER APPLICATION

FIRST SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
	INSIDE THE PC	3		3
	COMPUTER PLATFORMS	3		3
	COMPUTER PROGRAMMING "C" LANGUAGE	3		3
	SOFTWARE CONSTRUCTS AND TOOLS	3		3
	PRACTICAL LAB-I		4	
	TOTAL	12	4	12

SYLLABUS
DIPLOMA IN COMPUTER APPLICATION
EIILM University

SEMESTER – I

INSIDE THE PC

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

INSIDE THE PC

SYLLABUS

3E.133 INSIDE THE PC

Content

Identify the names, purpose and characteristics of system modules. Recognize these modules by sight or definition. Identify the names, purpose and characteristics of common peripheral ports, associated cabling, and their connectors. Recognize ports, cabling and connectors by sight.

Motherboard architecture and various components. Distinguish between the popular CPU chips in terms of their basic characteristics. Identify the types of RAM , form factors, and operational characteristics, PC Boot Process.

Identify proper procedures for installing and configuring common IDE devices. Chose the appropriate installation or configuration sequences in given scenarios. Recognize the associated cables.

Printer technologies. Electrophotographic (EP) Print Process. Recognize common printer problems and techniques used to resolve them.

Identify proper procedures for installing and configuring common peripheral devices. Choose the appropriate installation or configuration sequences in given scenarios. Determine the issues that must be considered when upgrading a PC. In a given scenario, determine when and how to upgrade system components.

Identify procedures to optimize PC operations in specific situations. Identify the various types of preventive maintenance measures, products and procedures and when and how to use them. Identify the various types of safety measures and when and how to use them.
, BPB Publication.

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SEMESTER – I

COMPUTER PLATFORMS

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

DESCRIPTION OF UNITS:

This unit is aimed at practitioners who need sufficient knowledge of architecture to make decisions

on the selection/ specification of systems and to use computer hardware and software effectively.

Students will be shown how to use operating systems to create their own operating environment and

participate in its development. Many practitioners communicate with specialist technical support

staff during the specification and planning of systems implementation. This unit aims to give such

practitioners the confidence to communicate with technical specialists and to validate their recommendations.

It is expected that centers will use current personal computer and networking resources.

Students

should be encouraged to read current journals to investigate and evaluate new hardware and software developments.

BLOCK 1

UNIT 1: Basic Computer Concepts, Architecture of Computer System, Basic Parts of computer system

UNIT 2: Computers then and now, Classification of Computers

UNIT 3: Performance of computer system, Bus architecture

UNIT 4: Primary Storage, Secondary storage

BLOCK 2

UNIT 5: Input devices, Output devices- Monitors, Printers etc.

UNIT 6: Computer selection, OS and its function

UNIT 7: Command Interpretation, Process management –I, Process management II

UNIT 8: Types of OS –I, Types of OS –II,

BLOCK 3

UNIT 9: Computer operations, Security & deadlock

UNIT 10: Network administration, Upgrading Opportunities

UNIT 11: Upgrading & Installation, Data communication system

UNIT 12: Transmission Media, Computer networks

BLOCK 4

UNIT 13: Network topologies, OSI Reference Model

UNIT 14: Data Communication Hardware, Internet -I

UNIT 15: Security & Electronic Infection, Hacking & Encryption

UNIT 16: Back Up & Recovery

LEARNING OUTCOMES:

1. Evaluate performance of a selected computer system
2. Employ operating systems
3. Upgrade a computer system
4. Participate in the planning of a network installation

REFERENCE BOOKS:

1. **P. K.Sinha;** Computer Fundamentals, BPB Publications
2. **Leon, Alexis; Leon, Mathews ;** Fundamentals of computer science and communication engineering,, BPB Publications
3. **Abraham Silberschatz, Peter Baer Galvin;** Operating systems concepts, , John Wiley & Sons Publications
4. **Operating System** By **Tann & Bomm**
5. **Computer Networks** By **Tann & Bomm**

SYLLABUS
DIPLOMA IN COMPUTER APPLICATION
EIILM University

SEMESTER – I

COMPUTER PROGRAMMING "C" LANGUAGE

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

BLOCK I

UNIT 1.0 Introduction to ‘C’ Language

- 1.1 History
- 1.2 Structures of ‘C’ Programming
- 1.3 Function as building blocks
- 1.4 Character set
- 1.5 Constants and Variables
- 1.6 C Tokens
- 1.7 Keywords
- 1.8 Identifiers
- 1.9 Data Types
- 1.10 Comments

UNIT 2.0 Operators

- 2.1 Types of operators
- 2.2 Precedence and Associativity
- 2.3 Expression
- 2.4 Statement and types of statements

UNIT 3.0 Built-in Operators and function

- 3.1 Console based I/O and related built-in I/O function
 - 3.1.1 printf()
 - 3.1.2 scanf()
 - 3.1.3 getch()
 - 3.1.4 getchar()
 - 3.1.5 putchar()
- 3.2 Concept of header files
- 3.3 Preprocessor directives :
 - 3.3.1 #include
 - 3.3.2 #define

BLOCK II

UNIT 4.0 Decision Control structures

- 4.1 The if Statement
 - 4.2 The Real Thing
 - 4.3 Multiple Statements within if
 - 4.4 The if-else Statement
- COMPUTER PROGRAMMING “C LANGUAGE”**

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- 4.5 Nested if-else
- 4.6 Forms of if
- 4.7 Use of Logical Operators
- 4.8 The else if Clause
- 4.9 Nested if-else
- 4.10 Use of Logical Operators
- 4.11 The else if clause

UNIT 5.0 Loop Control structures

- 5.1 While loop
- 5.2 For loop
 - 5.2.2 Nesting of loops
- 5.3 Odd loop
- 5.4 Do-while,
- 5.5 Other statements:
 - 5.5.1 Break
 - 5.5.2 Continue
- 5.6 Case Control Structure
 - 5.6.1 Using Switch
 - 5.6.2 Switch Versus If-else ladder
 - 5.6.3 goto

UNIT 6.0 Introduction to problem solving

- 6.1 Concept: problem solving
- 6.2 Problem solving techniques (Trial & Error, Brain storming, Divide & Conquer)
- 6.3 Steps in problem solving (Define Problem, Analyze Problem, Explore Solution)
- 6.4 Algorithms and Flowcharts (Definitions, Symbols)
- 6.5 Characteristics of an algorithm
- 6.6 Conditionals in pseudo-code
- 6.7 Loops in pseudo code
- 6.8 Time complexity: Big-Oh notation, efficiency
- 6.9 Simple Examples: Algorithms and flowcharts (Real Life Examples)

BLOCK I

UNIT 7.0 Simple Arithmetic Problems

- 7.1 Addition / Multiplication of integers
- 7.2 Determining if a number is +ve / -ve / even / odd
- 7.3 Maximum of 2 numbers, 3 numbers
- 7.4 Sum of first n numbers, given n numbers
- 7.5 Integer division, Digit reversing, Table generation for n,
- 7.6 Prime number, Factors of a number 15
- 7.7 Other problems such as Perfect number, GCD of 2 numbers etc

COMPUTER PROGRAMMING “C

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UNIT 8.0 Functions

- 8.1 Basic types of function
- 8.2 Declaration and definition
- 8.3 Function call
- 8.4 Types of function
- 8.5 Parameter passing
 - 8.5.1 Call by value
 - 8.5.2 Call by reference
- 8.6 Introduction to Pointers
- 8.7 Pointer Notation
- 8.8 Recursion.

Unit 9.0 Storage Class

- 9.1 Automatic Storage Class
- 9.2 Register Storage Class
- 9.3 Static Storage Class
- 9.4 External Storage Class

SYLLABUS
DIPLOMA IN COMPUTER APPLICATION
EIILM University

SEMESTER – I

SOFTWARE CONSTRUCTS AND TOOLS

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

DESCRIPTION OF UNITS:

This course aims to give students both a theoretical and a practical foundation in software Constructs & Tools, students will learn about the principles and methods of software engineering, including current and emerging software engineering practices and support tools. In the practical part, students will become familiar with the development of software products from an industry perspective, including generation of appropriate documents, under tight schedules and limited resources. Because this is a writing component course, there will be heavy emphasis on written communication skills.

BLOCK 1

UNIT 1: Software Engineering: Introduction to Software Engineering, Software, Software Process models, Software Life cycle,

System Concepts: Characteristics, classification, Information systems, system development Methodologies

UNIT 2: Life Cycle of various models: Objective, Generic Software Process model

System Development Life Cycle (SDLC): Planning , analysis, design, implementation, system operation and support

UNIT 3: System analysis and Feasibility study: Criteria to evaluate system requests, Overview of feasibility study, types of feasibility study, stages in feasibility study, Considerations.

UNIT 4: System design: types of design, Construction and Implementation: software construction and its principles

BLOCK 2

UNIT 5: Problem Solving Techniques: Brainstorming, Critical Path analysis, Decision trees and SWOT analysis,

UNIT 6: Abstraction and generalization: Abstraction, Information Hiding, Encapsulation, Generalisation, The process of Logical data modelling

UNIT 7: Decision Trees – concept and algorithms, issues in decision tree learning

UNIT 8: Project Management: Activities, Types of Plans, Scheduling, Project management tools and methods, techniques for Project management

BLOCK 3

UNIT 9: Testing and documenting solutions: Software testing, testing fundamentals,

types of testing, Black Box and White Box testing

UNIT 10: Spreadsheet: Manual system Vs Computer, Word processor, Spreadsheets – using functions, graphs and charts

UNIT 11: Constants, variables and literals: understanding data types, constants, variables, literals, external variables

UNIT 12: Control structures: Introduction, control constructs, Programming on control constructs

BLOCK 4

UNIT 13: Program Design: Introduction, program analysis, program design, program coding, program debugging and testing, program maintenance

UNIT 14: Algorithmic Methods: Algorithm and algorithmic structure, Pseudocodes

UNIT 15: Programming standards and Practice: Structured programs, Flowcharts

UNIT 16: Use of comments: Code Documentation

LEARNING OUTCOMES:

This course follows on from the course on Software Constructs & tool aides the students with the engineering principles, methods and practice of how a large system can be specified, designed and implemented.

REFERENCE BOOKS:

1. **Shari Pfleeger;** Software Engineering: The Production of Quality Software, 2nd Edition, Macmillan, 1991
2. **Roger Pressman;** Software Engineering: A Practitioner's Approach by, 4th Edition, McGraw-Hill, 1996
3. **Andrew Sage and James D. Palmer;** Software Systems Engineering
4. **Ghezzi, Jayazeri and Mandrioli;** Fundamentals of Software Engineering, Prentice-Hall, 1991
5. **Valdis Berzins and Luqi;** Software Engineering with Abstractions, Addison Wesley, 1991
6. **Ian Sommerville;** Software Engineering, Addison-Wesley
7. **Barbara Mynatt;** Software Engineering with Student Project Guidance
8. **Roger Jones;** Software Engineering
9. **David Alex Lamb;** Software Engineering: Planning for Change, Prentice-Hall, 1988
10. **N. D. Birrell and M.A. Ould;** A Practical Handbook for Software Development, Cambridge University Press, 1985/88

DIPLOMA IN COMPUTER APPLICATION

SECOND SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
	COMPUTER ARCHITECTURE	3		3
	SOFTWARE PROJECT MANAGEMENT	3		3
	System Analysis	3		3
	VISUAL PROGRAMMING	3		3
	Practical Lab-II		4	4
	TOTAL	12	4	12

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DIPLOMA IN COMPUTER APPLICATION
EIILM University

SEMESTER – II

SOFTWARE PROJECT MANAGEMENT

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Content

Introduction to Software Project Management

Introduction: what is project, management, software projects versus other projects, activities covered, mgmt control, requirement specification, problems with software projects

Project Planning

Overview of project planning: Project selection, Identify project scope and objectives, project infrastructure, analyze project characteristics, efforts, and activity risks, and allocate resources

Project Management

Management activities: proposal writing, project planning and scheduling, project costing, monitoring and reviews etc.

Project management: project plan, milestones and deliverables

Project scheduling: bar chart and activity network (PERT/ CPM, GANTT chart)

Risk management: risk identification, risk management activities, analysis, planning, monitoring

Selection of Appropriate Project Approach

Choice of process models: Waterfall, V-process, Spiral model, Prototyping, Incremental approach

Software effort estimation: Basis for estimates, Estimating by analogy, Albrecht function point analysis, COCOMO cost estimation model, Procedural code-oriented approach

Project Evaluation

Assessment: Strategic and Technical assessment, cost benefit analysis, evaluation techniques

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SEMESTER – II

SYSTEM ANALYSIS

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Chapter 1

Lifecycle Models

Systems Lifecycle:

the stages of a chosen cycle (e.g. specification, design, detailed design, code and unit test, integrate and test, maintenance), the purpose of each stage, definition of validation and verification

Evaluation of Models:

comparison of a chosen model with other techniques (e.g. prototyping, Dynamic systems analysis or object-based methods)

Chapter 2

System Investigation

Fact-finding Techniques:

interview, observation, investigation, questionnaire, brainstorming, Delphi method

Fact-recording Methods and Standards:

current computer and paper-based fact-recording methods such as grid charts, flow diagrams, standard documentation technique

Chapter 3:

Functional and Data Modelling

Functional modeling: identification of system processes and functions, data flow diagrams and process modeling techniques
Data modeling: top down techniques, entity relation modeling, and decision trees, table and data dictionary, implementation of a simple relational system using a proprietary database

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SEMESTER – II

VISUAL PROGRAMMING

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Unit 1

Learning Objectives

After reading this unit you should appreciate the following:

- 1.1 Introduction
- 1.2 Elements of Visual Languages
 - 1.2.1 Icons
 - 1.2.2 Operator
 - 1.2.3 Gramma
 - 1.2.4 Representing meaning i.e., Diagram Understanding
- 1.3 Extending Visual Languages For Multimedia
 - 1.3.1 Teleaction Objects
 - 1.3.2 Generalized Icons and Multimedia Operators
 - 1.3.3 Multidimensional Language
- 1.4 Visual Programming Languages
 - 1.4.1 Index Cells as Basic Components for Visual Programming
 - 1.4.2 A Visual Programming Tool for Index Cell Construction
 - 1.4.3 Visual Queries

Unit 2

Generalized Icons

Learning Objectives

After reading this unit you should appreciate the following:

- 2.1 Introduction
- 2.2 Generalized Icons
- 2.3 Examples of Iconic Systems
- 2.4 Formal Specification of Iconic Systems
- 2.5 Iconic Operators
- 2.6 Syntactic Analysis of Iconic Sentence
- 2.7 Semantic Analysis of Iconic Sentence
- 2.8 Specification of User Interfaces as Iconic Systems

- 2.9 Determination of Icon Purity
- 2.10 Fuzzy Iconic System

Unit 3

A Visual Language Compiler

Learning Objectives

After reading this unit you should appreciate the following:

- 3.1 A Visual Language Compiler
- 3.2 The Icon Dictionary ID
 - 3.2.1 Specification of Physical Part of an Icon
 - 3.2.2 Specification of Logical Part of an Icon
 - 3.2.3 Structure of ID
 - 3.2.4 Examples for the Definition of ID
- 3.3 The Operator Dictionary OD
- 3.4 An Example
- 3.5 Implementation of the Visual Language Compiler
- 3.6 Discussion

Unit 4

Windows Programming

Learning Objectives

After reading this unit you should appreciate the following:

- 4.1 The Environment of a Window Application
- 4.2 Basic Concepts of Windows Programming
 - 4.2.1 Types and Names
 - 4.2.2 Win Main() Function
 - 4.2.3 API Functions
 - 4.2.4 Creating a Main Window
 - 4.2.5 Event-Driven Programming
- 4.3 Displaying Text
 - 4.3.1 The Device Context
 - 4.3.2 The Text Out() Function
- 4.4 Programming With Graphics Device Interface (GDI)
- 4.5 Receiving Commands and Data from User

SYLLABUS
DIPLOMA IN COMPUTER APPLICATION
EIILM University

SEMESTER – II

COMPUTER ARCHITECTURE

Sub. Code:

Credits: 03

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks