

Purbanchal University

Faculty of Engineering, Biratnagar, Nepal

Syllabus

Level: Bachelor

Program: Bachelor in Civil Engineering

Subject: Computer Programming

Subject Code: BCE----

Year: II

Semester: III

Teaching Schedule Hours/Week					Examination Schedule					Total Marks	
					Final				Internal Assessment		
					Theory		Practical		Theory Marks		Practical Marks
Credit Hours	L	T	P	Total	Duration	Marks	Duration	Marks	40	25	125
3	3	-	3	6	3 Hrs.	60	-	-			

Note: L: Lecture T: Tutorial P: Practical

Course objectives:

To provide a thorough understanding of the fundamentals of C programming to a student so that he/she will be able to code, compile and test C programs as well as to take up Systems programming or Advanced C programming course.

Course Details:

1. Problem Solving Using Computers 2 Hours

- 1.1 Problem Definition
- 1.2 Problem Analysis
- 1.3 Algorithm Development & Flowcharting
- 1.4 Coding
- 1.5 Compilation, Debugging & Execution
- 1.6 Testing
- 1.7 Program Documentation

2. Introduction to C 1 Hour

- 2.1 Historical Development of C
- 2.2 Importance of C
- 2.3 Basic Structure of C Programs



8. Arrays and Strings 6 Hours

- 8.1 Introduction
- 8.2 Single and Multi-dimension arrays
- 8.3 Processing an array
- 8.4 Passing arrays to Functions
- 8.5 Arrays of Strings
- 8.6 String Handling Function

9. Pointers 6 Hours

- 9.1 Fundamentals
- 9.2 Pointer Declarations and initialization
- 9.3 Accessing value through a pointer
- 9.4 Pointer to a pointer
- 9.5 Similarities between Pointers and one dimensional arrays
- 9.6 Pointer with one dimensional and two dimensional arrays
- 9.7 Passing Pointers to Functions
- 9.8 Dynamic Memory Allocation

10. Structures and Unions 6 Hours

- 10.1 Defining a Structure
- 10.2 Arrays of Structures
- 10.3 Structures within Structures
- 10.4 Processing a Structure
- 10.5 Structures & Pointers
- 10.6 Passing Structures to Functions
- 10.7 Union & its importance

11. Data Files 3 Hours

- 11.1 Opening & Closing a Data File
- 11.2 Creating a Data File
- 11.3 Error Handling during I/O Operations
- 11.4 Processing a Data File

12. Graphics 1 Hour

- 12.1 Initialization
- 12.2 Graphical mode
- 12.3 Simple programs using built in graphical function

Laboratories:

There shall be lab exercises covering concepts mentioned in syllabus of C programming.



2.4 Executing a C Program

3. C Fundamentals 2 Hours

- 3.1 Character Set
- 3.2 Identifiers & Keywords
- 3.3 Data Types and modifier
- 3.4 Constants, Variables
- 3.5 Declarations and initialization of variables
- 3.6 Escape Sequences
- 3.7 Preprocessors Directives
- 3.8 typedef statement
- 3.9 Symbolic Constants

4. Operators & Expression 3 Hours

- 4.1 Operators:
 - 4.1.1 Arithmetic, Relational, Logical, Bitwise, Assignment, Increment, Decrement, sizeof(), Conditional operators
- 4.2 Precedence, Associativity, and order of evaluation

5. Input and Output 3 Hours

- 5.1 Types of I/O
- 5.2 Format Specifier
- 5.3 Reading & Writing data
- 5.4 Formatted and Unformatted I/O statements

6. Control Statements 6 Hours

- 6.1 Repetitive control statements: for, while, do-while
- 6.2 Conditional control statements: if, if else, Nested if, else if ladder, switch
- 6.3 Unconditional control statements: break, continue, goto
- 6.4 exit() function

7. Functions 6 Hours

- 7.1 Advantages of using Function
- 7.2 User Defined & Library Functions
- 7.3 Function Prototypes, definition & return statement
- 7.4 Call by Value & Call by reference
- 7.5 Concept of Local, Global & Static variables
- 7.6 Recursive Function
- 7.7 Storage Classes and Visibility, Automatic or local variables, Global variables, Static variables, External variables



References:

1. Kelly & Pohl, “ A Book on C “, Benjamin/Cummings
2. Brian W. Keringhan & Dennis M. Ritchie, “ The „C“ Programming Language”, PHI
3. Brtons G. Gotterfried, “Programming with „C””, Tata McGraw-Hill
4. Stephen G. Gotterfried, “Programming in C”, CBS Publishers & Distributors
5. E. Balguruswamy, “Programming in C”, Tata McGraw-Hill
6. Yashvant Kanetkar, “Let us C”, BPB Publications

