Course Name : Electronics Engineering Group

Course Code : ET/EJ/IE/IS/EN/EX/IC/MU/EV/DE/IU/ED/EI

Semester : Third

Subject Title : Programming in 'C' **Subject Code:**

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	Paper Hrs	TH	TEST	PR	OR	TW	TOTAL
01	--	02	--	--	--	50#	--	25@	75

Rationale:

'C' is the most widely used computer language, which is being taught as a core subject. 'C' is general-purpose structural language that is powerful, efficient and compact, which combines features of high-level language and low-level language. It is closer to Man and Machine both. Due to this inherent flexibility and tolerance it is suitable for different development environments .Due to these powerful features C has not lost its importance and popularity in recently developed and advanced software industry C can also be used for system level programming so to develop Operating system like applications C is still considered as first priority programming language.

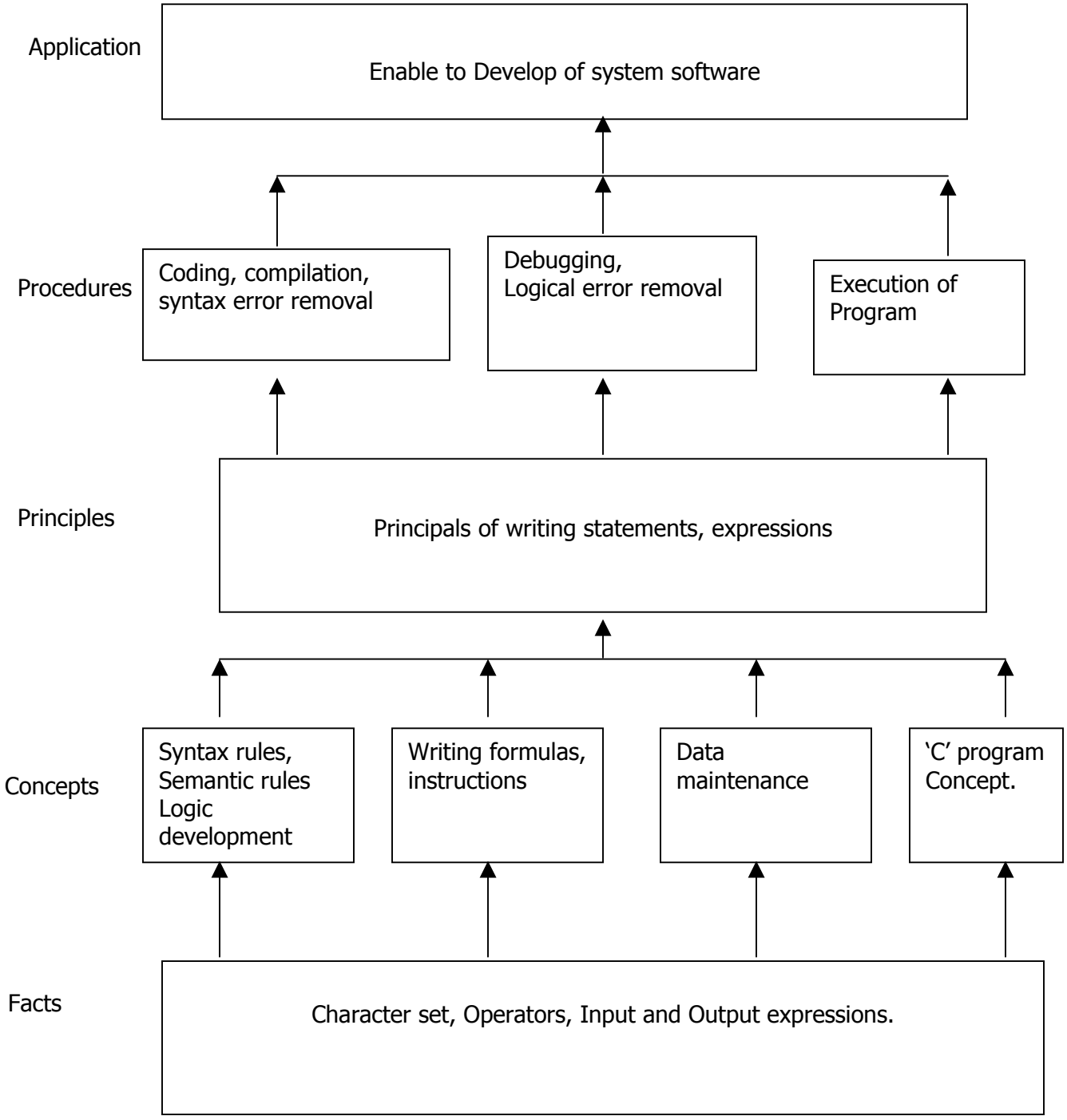
This subject covers from the basic concept of C to the pointers in C. This subject will act as "programming concept developer" for students. It will also act as "Backbone" for subjects like OOPS, VB, Windows Programming, JAVA, OOMD, etc.

Objectives:

The students will be able to:

1. Describe the concepts of constants, variables, data types and operators.
2. Develop programs using input and output operations.
3. Write programs using different looping and branching statements.
4. Write programs based on arrays and strings handling functions.
5. Write programs using user-defined functions, structures and union.
6. Write programs using C pointers.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hrs
1	**Basics of C**	02
	1.1 History of C, where C stands 1.2 C character set, tokens, constants, variables, keywords 1.3 C operators (arithmetic, Logical, assignment, relational, increment and decrement, conditional, bit wise, special, operator precedence), C expressions data types 1.4 Formatted input, formatted output.	
2	**Decision making**	03
	2.1 Decision making and branching if statement (if, if-else, else-if ladder, nested if-else) Switch case statement, break statement. 2.2 Decision making and looping while, do, do-while statements for loop, continue statement	
3	**Arrays and Strings**	03
	3.1 Arrays Declaration and initialization of one dimensional, two dimensional and character arrays, accessing array elements. 3.2 Declaration and initialization of string variables, string handling functions from standard library (strlen (), strcpy (), strcat (), strcmp ()).	
4	**Functions, Structures**	04
	4.1 Functions Need of functions, scope and lifetime of variables, defining functions, function call (call by value, call by reference), return values, storage classes. category of function (No argument No return value, No argument with return value, argument with return value), recursion 4.2 Structures Defining structure, declaring and accessing structure members, initialization of structure, arrays of structure.	
5	**Pointers**	04
	5.1 Understanding pointers, declaring and accessing pointers, Pointers arithmetic, pointers and arrays	
	Total	16

Practical:

Skills to be developed:

Intellectual skills:

1. Use of programming language constructs in program implementation.
2. To be able to apply different logics to solve given problem.
3. To be able to write program using different implementations for the same problem
4. Study different types of errors as syntax semantic, fatal, linker & logical
5. Debugging of programs
6. Understanding different steps to develop program such as
   - Problem definition
   - Analysis
   - Design of logic
   - Coding
   - Testing
   - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

1. Proper handling of Computer System**.**

List of practical:

Write a C program

Any one

1) To display hexadecimal, decimal, octal format of the entered numbers.
2) To display entered number with leading zeros and trailing zeros.
3) To display entered numbers with right justification and left justification.

Any One

4) To demonstrate all possible formatting specifiers.

Any one

5) To find greatest/ smallest of 3 numbers.
6) To display pass class, second-class, distinction according to the marks entered.

Any one

7) To find even or odd numbers.
8) To display spellings of number 1-10 on entry.

Any one

9) To display menu 1. Addition 2. Subtraction 3. Multiplication 4. Division and execute it using switch case.

10) To demonstrate continue and BREAK statements.

Any one

11) To display our College name twenty times on screen.
12) To display all even numbers from 1-100.
13) To perform addition of 1-100 numbers.

Any one

14) To find smallest / largest number from array elements.
15) To sort array elements in ascending / descending order.

Any one

16) To enter elements for 3X3 matrix and display them.
17) To calculate addition / subtraction of 2 dimensional matrix.
18) To calculate multiplication of 2 dimensional matrix.

Any one

19) To demonstrate output of standard library functions Strlen (), strcpy (), strcat (), strcmp ().

Any one

20) To calculate area of circle using function.
21) To calculate factorial of any given number using recursion.

Attempt All

22) To demonstrate call by reference, call by value
23) To maintain and manipulate student data using structure.
24) To perform 4 arithmetic functions on pointers.

Learning Recourses:

1. Books:

Sr.No.	Author	Name of the Book	Publisher
1	Balgurusamy	Programming in 'C'	Tata Mc-Graw Hill
2	Kanetkar	Let's 'C'	BPB
3	Herbert Shildt	Complete reference C	Tata Mc-Graw Hill

2. Websites:

- http://cplus.about.com/od/beginnerctutoriali/a/blctut.htm
- http://computer.howstuffworks.com/c.htm
- Objective questions:
    1. http://www.indiastudycenter.com/studyguides/sc/objtest/default.asp

Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students.