

UNIVERSITY OF MADRAS
B.Sc. DEGREE COURSE IN MATHEMATICS
SYLLABUS WITH EFFECT FROM 2020-2021

BMA-DSEA1

ELECTIVE-I: PROGRAMMING IN 'C' WITH PRACTICALS

Inst.Hrs : 6

Credits : 5

YEAR: III
SEMESTER: V

Learning outcomes:

Students will acquire knowledge

- About the basic concepts and structure of 'C' program.
- To write simple programs with Mathematical Applications.

THEORY

UNIT I

Introduction - Constants-Variables-Data-types -Operators, Precedence of operators – Managing Input and Output Operations .

Chapters : 2,3 and 4.

UNIT II

Decision making and branching: Simple if, if else, nested if, else if ladder and switch statement – conditional operator – go to statement.

Decision making and looping : while, do while and for statement – nested for loops – jumps in loops (continue and break statements).

Chapters : 5 and 6.

UNIT III

Arrays : One dimensional and 2 dimensional arrays – declarations – initialization of arrays.

Character Arrays and Strings: Declaration and Initialization of Strings - Reading and Writing strings - Operations on strings - String handling functions.

Chapters: 7 and 8

UNIT IV

Functions : Need for User defined functions- A Multi function Program- Elements of User defined functions - Function definition , Function Call and Function Declaration – Return Values and their types- Categories of functions – Nesting of Functions- Recursion .

Pointers: Understanding Pointers-Accessing address of a variable- Declaration and Initialization of Pointers- Accessing a Variable through its Pointer- Function call by reference - call by value.

Chapters : 9 and 11.

UNIT V

File Management in C : Definition-Opening and Closing a file- Input/ Output operations on Files- Error Handling during I/O operations.

Chapter 12.

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Content and Treatment as in

“Programming in ANSI C”, 7th Edition, 2017, by E. Balagurusamy, McGraw Hill Education India Private Limited.

Reference:-

1. “Programming in C” by Venugopal.
2. “Programming with C” by Gottfried.B.S ,Schaum”s outline series, TMH 2001.
3. “Let us ‘C’” by YashvantKanitkar ,BPB Publications.
4. “Programming with C” by R.S.Bichkar,Universities Press (INDIA) Pvt.Ltd.

e-Resources:

1. <https://www.w3schools.in/c-tutorial>.
2. <https://en.cppreference.com/w/c>.

PRACTICALS

Writing ‘C’ programs for the following:

1. To convert Centigrade to Fahrenheit
2. To find the area, circumference of a circle
3. To convert days into months and days
4. To solve a quadratic equation
5. To find sum of n numbers
6. To find the largest and smallest numbers
7. To generate Pascal’s triangle, Floyd’s triangle
8. To find the trace of a matrix
9. To add and subtract two matrices
10. To multiply two matrices
11. To generate Fibonacci series using functions
12. To compute factorial of a given number, using functions
13. To add complex numbers using functions
14. To concatenate two strings using string handling functions
15. To check whether the given string is a palindrome or not using string handling functions.

Question paper pattern: External (60)+ Internal(40)

Internal:

Internal Practical Assessment + Attendance + Record = 30 + 5 + 5 = 40 marks

External:

- Answer any 2 questions out of 3 questions : (2 x 30 = 60)