



ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+' Grade by NAAC(CGPA:3.68/4.00)

College with Potential for Excellence by UGC

DST-FIST Supported & STAR College Scheme by DBT

Faculty of Science

Bachelor of Computer Application (B.C.A.)

SUBJECT: BCA

B.CA. I Semester

Paper-Minor

Programming and Problem Solving through 'C'

Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Identify when to use computers and outline the main tasks for programming solutions.	U, A
CO 2	Plan your code with pseudocode and choose the best way to organize your data.	K, A
CO 3	Select the best programming tools for the job, based on their strengths and weaknesses.	A
CO 4	Write and refine programs by making corrections and improvements until they work correctly.	A, C
CO 5	Use numerical methods to solve problems effectively with computer programming.	A

Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	4	40	60	100
Practical	2	40	60	100
Total	6	200		

Evaluation Scheme

	Marks	
	Internal	External
Theory	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)
Practical	3 Internal Exams (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)





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Paper-Minor

Programming and Problem Solving through 'C' Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs.

Maximum Marks: 60

Units	Topics	No. of Lectures
I	Classification of programming language: Structured programming concepts, modular programming, top-down programming approach. Problem- Solving Techniques: Steps for Problem solving- Problem definition and analysis, Program design (Algorithm, Flowchart), Coding, Compilation, Debugging and testing, Documentation, Implementation and Maintenance. Basics of C: History of C, salient Features of C, C language IDE'S: What are IDE's Types of IDE's, Structure of a C Program, a Simple C Program, compiling a C Program, Link and Run the C Program.	12
II	Variables and Constants: Character Set, Identifiers and Keywords, Rules for Forming Identifiers, Data Types, Qualifiers, Variables, Declaring Variables, Initializing Variables, Constants, Types of Constants, Operators, expressions, operator precedence and associativity. Managing input/output function: formatted and unformatted. Conditional Statements and Loops: Decision Control Statements: if Statement, switch Statement, Loop Control Statements: while Loop, do-while Statement, for Loop, Nested Loop, goto Statement, Break Statement, Continue Statement.	12
III	Array: one dimensional array Declaration, Initialization, insertion, deletion of an element from an array, finding the largest/smallest element in an array, two dimensional arrays, addition / multiplication of matrices. String: Declaration and Initialization of Strings, String formatted specifiers, Array of Strings, Use of <string.h>, String library function (strlen, strcpy, strcmp, strcat, strlen, strrev), Storage Class: Need & types of Storage class,	12
IV	Functions: Definition of a Function, types of function, Declaration of a Function, Function Prototypes, passing arguments to a function, call by value, call by reference, command line argument, recursion. Pointers: pointers and their characteristics, address and indirection operators, pointer Type declaration and assignment, pointer arithmetic, passing pointers to functions, array of pointers, introduction to pointer to pointer.	12
V	Structures: Declaration of Structures, Accessing the Members of a Structure, Initializing Structures, Structures as Function Arguments, Structures and Arrays, Preprocessor: What is pre-processor, Type of Pre-processor, Macros, File Inclusion, Conditional Compilation, Other directives. Dynamic memory allocation Memory management, Types of memory allocation, Allocation (malloc, calloc, realloc), Deallocation(free), Enumeration, typedef.	12

Suggested Readings

Textbooks:

- D. Ravichandran, programming New Age International, 1996.
- E. Balaguruswamy, Tata McGraw Hill Pub.

Reference Books:

- Y.Kanitkar, Let us C. BPB Publication, 4th Ed. 2002.
- Rajiv Dharaskar, Hidden Treasure of C, BPB Publication, 1995.



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Practical

No. of Lab Practical (in hours per week): 2 Hrs. per week

Suggestive List of Practical

1. Basic C commands on computer
2. Write a program to check given year is leap or not
3. Write a program to find maximum from given three number without using logical operator.
4. Write a program to find area of a circle, rectangle, and square using switch-case.
5. Write a program whether a given number is prime or not.
6. Write a program to input 10 numbers add it and find its average.
7. Write a program to generate even/odd series from 1 to 100.
8. Write a program to create a pyramid structure
9. Write a program to reverse a string.
10. Write a program to find whether a given string is PALINDROME or not.
11. Write a program to change the case of string.
12. WAP to print Fibonacci series
13. Write a program to generate a series $1+1/1!+2/2!+3/3!+----- +n/n!$
14. Write a program to generate series $1+1/2!+1/3!+----- +1/n!$
15. WAP to find length of string without using built in function.
16. Write a program for call by value and call by reference.
17. Write a recursive program to calculate factorial of a given number.
18. Write a program to print sum of two matrices.
19. Write a program to demonstrate different storage
20. Write a program to demonstrate concept of structure.

