



ADD On (Principles of Programming and Algorithms)
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[SKILL ENHANCEMENT COURSE]

Semester: I	Credits: 2	Subject Code: ADBC12001	Lectures: 30
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Credit Distribution: - 1 credit for theory (15 Lectures) and 1 credit for Practical's.
 Note: - Practical of PPA is on Computer fundamental and Scratch Programming

Course Outcomes:

At the end of this course the learner will be able to,

- Analyze the problem and find the logical solution.
- Analyze the basics of programming.
- Relate how to use programming in day to day application.
- Develop Analytical / Logical thinking and Problem solving capabilities.

Unit 1: Algorithm	06
<ul style="list-style-type: none"> • Concept: Problem, Algorithm. • Characteristics of an algorithm. • Examples <ul style="list-style-type: none"> ○ Addition / Multiplication of integers ○ Determining if a number is +ve / -ve , even / odd ○ Maximum of 2 numbers , 3 numbers ○ Sum of first n numbers, sum of given n numbers ,Sum of digits of a given number, sum of first and last digit of a Number. ○ Digit reversing, Table generation for number n, ○ Factorial of a number, Prime number, Factors of a number, Perfect number, Palindrome number ,Armstrong number ○ GCD And LCM of 2 numbers • Managing I/O operations • Console based I/O and related built-in I/O functions <ul style="list-style-type: none"> ○ printf(), scanf() ○ getch(), getchar() • Formatted input and formatted output 	

Unit 2: Flowchart	03
<ul style="list-style-type: none"> • Introduction • Symbols • Draw flowcharts for algorithms implemented in unit 1 	

Unit 3: Function	02
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<ul style="list-style-type: none"> • Definition, Syntax. • Introduction to Library functions : such as pow(),sqrt() etc • Recursion • Factorial of a number. Sum of digits of a given number. 	
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Unit 4: Array	04
<ul style="list-style-type: none"> • Introduction • Algorithms and Flowcharts using array • Maximum and minimum element from an array • Reversing elements of an array • Mean and Median of n numbers • Row major and Column major representation of an array • Sum of elements of an array • Matrices: Addition, Multiplication, Transpose, Symmetry, upper/lower triangular 	

#12 hours for Library work, assignments, practical or field work

Reference Books:

- R. G. Dromy *How to solve it by Computer*, Pearson
- Horowitz and Sahani *Fundamentals of Data Structures*, - Universities Press
- Cormen, Leiserson, Rivest *Introduction to algorithms*, Stein-MIT Press

Recommended websites:-

- <https://www.geeksforgeeks.org/fundamentals-of-algorithms/>
- edrawsoft.com/explain-algorithm-flowchart.html
- <https://www.visual-paradigm.com/tutorials/flowchart-tutorial/>

Board Of Studies	Name	Signature	
Head of the Department	Ms Smita Borkar		
Faculty	Asst Prof. Deepali Gupta		
Faculty	Asst Prof Divya Chitre		
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Subject Expert (Outside SPPU)	Dr. Sagar Jambhorkar		
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Industry Expert	Mr Sumit Palsingh:		
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