

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spec.	Computer Science and Business Systems			
Semester	I				Version	1.0.0.0			
Effective from Academic Year	2026-27				Effective from the batch admitted in	July 2026			
Course Code	2PCC-CB-1101				Course Name	Fundamentals of Computer Science			
Course Category	Professional Core Courses (PCC)								
Teaching Scheme					Examination scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	50	50	100
Hours	3	0	4	0	7	Practical	25	25	50
Pre-requisites:									
Not Applicable									
Course Outcomes									
COs	Description								
CO1	Apply algorithmic thinking to formulate and represent solutions for basic arithmetic and logical problems using algorithms and flowcharts.								
CO2	Implement conditional branching, iterative constructs, and recursion to solve structured programming problems in C.								
CO3	Analyse and use arrays, strings, and functions to design modular and efficient C programs.								
CO4	Design and develop C applications using pointers for efficient memory access and data manipulation.								
Theory Syllabus									
Unit	Content								Hours
1	<b>General problem-Solving concepts:</b> Algorithm and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loops.								4
2	<b>Types Operator and Expressions with discussion of variable naming and Hungarian Notation:</b> Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithmetic Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operators, Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, proper variable naming and Hungarian Notation.								6
3	<b>Control Flow with discussion on structured and unstructured programming:</b> Statements and Blocks, If-Else-If, Switch, Loops – while, do, for, break and continue, goto labels, structured and un- structured programming								7
4	<b>Functions and Program Structure with discussion on standard library:</b> Basics of functions, parameter passing and returning type, C main return as integer, External, Auto, Local, Static, Register Variables, Scope Rules, Block structure, Initialization, Recursion, Pre-processor, Standard Library Functions and return types.								6

5	<b>Pointers and Arrays:</b> Pointers and address, Pointers and Function Arguments, Pointers and Arrays, Address Arithmetic, character Pointers and Functions, Pointer Arrays, Pointer to Pointer, Multi- dimensional array and Row/column major formats, Initialization of Pointer Arrays, Command line arguments, Pointer to functions, complicated declarations and how they are evaluated.	6
6	<b>Structures:</b> Basic Structures, Structures and Functions, Array of structures, Pointer of structures, Self- referral structures, Table look up, typedef, unions, Bit-fields	5
7	<b>Input and Output:</b> Standard I/O, Formatted Output – printf, Formated Input – scanf, Variable length argument list, file access including FILE structure, fopen, stdin, sdtout and stderr, Error Handling including exit, error and error.h, Line I/O, related miscellaneous functions	4
8	<b>Unix system Interface :</b> File Descriptor, Low level I/O – read and write, open, create, close and unlink, Random access – lseek, Discussions on Listing Directory, Storage allocator	4
9	<b>Programming Method:</b> Debugging, Macro, User Defined Header, User Defined Library Function, makefile utility.	3

#### Practical and Self Learning Content

Practical, assignments, quiz, industrial visit, field survey and tutorials are based on the above syllabus.

1. Algorithm and flowcharts of small problems like GCD

#### 2. Structured code writing with:

1. Small but tricky codes
2. Proper parameter passing
3. Command line Arguments
4. Variable parameter
5. Pointer to functions
6. User defined header
7. Make file utility
8. Multi file program and user defined libraries
9. Interesting substring matching / searching programs
10. Parsing related assignments

#### Text Books

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|---|---|
| 1 | The C Programming Language, (Second Edition) B. W. Kernighan and D. M. Ritchi, PHI. |
| 2 | Programming in C, (Second Edition) B. Gottfried, Schaum Outline Series.             |

#### Reference Books

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| 1 | C: The Complete Reference, (Fourth Edition), Herbert Schildt, McGraw Hill. |
| 2 | Let Us C, Yashavant Kanetkar, BPB Publications.                            |

#### ICT/MOOCs Reference

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|---|---|
| 1 | <a href="https://nptel.ac.in/courses/106/104/106104128/">https://nptel.ac.in/courses/106/104/106104128/</a> |
| 2 | <a href="https://nptel.ac.in/courses/106/105/106105171/">https://nptel.ac.in/courses/106/105/106105171/</a> |

Mapping of COs, POs, and PSOs														
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	0	1	0	0	0	1	0	2	3	0	1
CO2	3	3	2	0	2	0	0	0	1	0	2	3	0	2
CO3	3	2	3	1	2	0	0	0	1	0	2	3	1	2
CO4	3	2	3	1	3	0	0	0	1	0	2	3	1	3

Bloom's Taxonomy Level				
Unit	Unit Title	Aligned COs	Learning Hours	BTL Level
1	General problem-Solving concepts	CO1,CO2	4	U,A
2	Types Operator and Expressions with discussion of variable naming and Hungarian Notation	CO1,CO2	6	U,A
3	Control Flow with discussion on structured and unstructured programming	CO1,CO2, CO3	7	A,N
4	Functions and Program Structure with discussion on standard library	CO3,CO4	6	A,N
5	Pointers and Arrays	CO3,CO4	6	A,C
6	Structures	CO4	5	A,N
7	Input and Output	CO4	4	A
8	Unix system Interface	CO1	4	A,N
9	Programming Method	CO3,CO4	3	A,E

**Note:**

- Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)
- 1 Hour Lecture = 1 Credit, 1 Hour Tutorial = 1 Credit, 2 Hours Practical = 1 Credit, 2 Hours Internship/Project/Seminar = 1 Credit
- Bloom's Taxonomy Level (BTL): R: Remember, U: Understand, A: Apply, N: Analyze, E: Evaluate, and C: Create