

**B.C.A (1st Semester)
Teaching Schedule**

030010109: CC1-Fundamentals of Programming

Objective: To introduce the fundamentals of programming concepts, methodology and enforce logical thinking to design and develop algorithm along with problem solving techniques.

Course Outcomes: Upon completion of the course, the student shall be able to

C01: Describe the basic concepts of programming.

C02: Solve problems through program development life cycle.

C03: Design and develop programs using conditional and loop control statements.

C04: Get knowledge about array and able to use for problem solving.

C05: Design and develop programs using methods.

C06: Perform file operations like read, write and append.

C07: Design and develop derived data type and use in problem solving.

Unit	Sub Unit	No. of Lectures(s)	Topics	Reference Chapter/Additional Reading	Teaching Methodology to be used	Evaluation Parameters
Unit 1 : Introduction of Computers, Logic and Structure[8 hours]						
1	1.1	1	Programming Paradigm	http://cs.lmu.edu/~ray/notes/paradigms/	Chalk-Talk and Discussion	Quiz(Th) Unit Test-1(Th & Pr)
	1.2	1	Programming Process: Problem Understanding, Planning, Coding, Translation, and Testing	JF#1-pg no 8-13	Chalk-Talk and Discussion	
	1.3	2	Data Hierarchy, Flowchart Symbols, Pseudo Code Statements and Connector	JF#1-pg no 15-22	Chalk-Talk and Discussion	
	1.4	2	Variables, Data Types and Evolution of Programming Techniques	BR#2-pg no 31-46, JF#1-pg no 27	Chalk-Talk and Discussion	
	1.5	1	Unstructured Spaghetti Code and Recognizing Structure	JF#3-pg no 93-115	Chalk-Talk and Discussion	

	1.6	1	Storage Classes and Basic Structures	BR#Appendix J-pg no 1103 JF#3-pg no 95-115	Chalk-Talk and Discussion	
Unit 2 : The Program Planning Process and Making Decisions[8 hours]						
2	2.1	1	Documentation, Advantages of Modularization and Program Modularization	BR#2-pg no 77, JF#2-pg no 52-59	Chalk-Talk and Discussion	Unit Test-1(Th) Unit Test-1(Pr)
	2.2	1	Local and Global Variables and Constants	JF#2-pg no 59-61 BR#2-pg no 47-53	Chalk-Talk and Discussion	
	2.3	1	Mainline Logic and Procedural Programs	JF#2-pg no 61-66	Chalk-Talk and Discussion	
	2.4	1	Hierarchy Chart and Features of Program Design	JF#2-pg no 66-76	Chalk-Talk and Discussion	
	2.5	3	Boolean Expressions, Relational Operators, Logical Operators, Precedence	BR#3-pg no 94-113, BR#5-pgno 232-236	Chalk-Talk, Discussion and Demonstration	
	2.6	1	Case Structure and Decision Tables	JF#3-pg no 95-103	Chalk-Talk and Discussion	
Unit 3: Looping and Control Breaks[8 hours]						
3	3.1	3	Control and Nested Loops	BR#5-pg no 238-264	Chalk-Talk, Discussion and Demonstration	

	3.2	2	Common Mistakes and Advantages of Looping	JF#4-pg no 148, 155, 162, 185	Chalk-Talk, Discussion and Demonstration	Open Book Unit Test-2(Pr)
	3.3	2	For, Do While and Do Until Loops	BR#6-pg no 304-325	Chalk-Talk, Discussion and Demonstration Video- http://spoken-tutorial.org/cdcontent/	
	3.4	1	Single-Level Break and Multiple-Level Control Break	BR#6-pg no 338-341	Chalk-Talk, Discussion and Demonstration	
Unit 4: Arrays[8 hours]						
4	4.1	1	Array Declaration and Memory allocation	JF#6-pg no 229-231	Chalk-Talk, Discussion and Demonstration Video- http://spoken-tutorial.org/cdcontent/	
	4.2	1	Array Initialization	BR#8-pg no 463-465	Chalk-Talk, Discussion and	

					Demonstration Video- http://spoken-tutorial.org/cdcontent/	Unit-Test-2(Th) Unit-Test-2(Pr)
	4.3	2	Constant Arrays and Parallel Arrays	JF#6-pg no 240-242,246-253	Chalk-Talk, Discussion and Demonstration	
	4.4	1	Searching from Array	JF#6-pg no 242, 254	Chalk-Talk, Discussion and Demonstration	
	4.5	3	String processing	BR#11-pg no 666-712	Chalk-Talk and Discussion	
Unit 5: Methods[7 hours]						
5	5.1	2	Method Creation with single parameter	BR#4-pg no 155-164	Chalk-Talk, Discussion and Demonstration	Unit-Test-2(Th) Section Test (Pr)
	5.2	1	Method Calling	BR#4-pg no 165-166	Chalk-Talk, Discussion and Demonstration Video- http://spoken-tutorial.org/cdcontent/	

	5.3	2	Method Creation with Multiple Parameters	BR#4-pg no 186	Chalk-Talk, Discussion and Demonstration	
	5.4	2	Passing Arrays into Methods	BR#8-pg no 473-481	Chalk-Talk, Discussion and Demonstration	
Unit 6: Derived Types and File Handling[9 hours]						
6	6.1	1	Overview of Pointers	BR#9-pg no 558-572	Chalk-Talk, Discussion and Demonstration	Internal (Th) Semester-End(Pr)
	6.2	2	Structure declaration and Structure of Array	BR#12-pg no 752-768	Chalk-Talk, Discussion and Demonstration	
	6.3	1	Enumerated and Union Types	BR#12-pg no 746,782	Chalk-Talk, Discussion and Demonstration	
	6.4	3	Sequential and Binary Files : Creation, Merging and Updating	BR#13-pg no 821-842	Chalk-Talk, Discussion and Demonstration	
	6.5	1	Command Line Arguments	BR#Appendix-H pg no 1091-1094	Demonstration	
	6.6	1	Pre-processor Directives	BR#Appendix-G pg no 1071	Chalk-Talk, Discussion	

Text Book:

1. Joyce Farrell- Programming Logic and Design -Cengage Learning. [JF]
2. Behrouz Forouzan, Richard Giberg- Computer Science-A Structure Approach Using

Cengage Learning. [BR]

Reference Books:

1. Pradip Dey, Manas Ghosh- Programming in C - Oxford Higher Education
2. Y. Kantikar – Let us C – BPB Publication
3. Juneja, Anita Seth- Programming in C - Cengage Learning
4. Amiya Rath, Alok Jagadev, Santosh Swain- Programming in C - SCITECH
5. B. Gottfried – Schaum’s outline of Programming with C - Shaum Series

Note: # denotes chapter number.

Course objectives and Course outcomes mapping:

Understand the fundamentals of programming concepts and methodology: CO1, CO2, CO3, CO4, CO5, CO6 and CO7

To develop algorithm, enforces logical thinking: CO1, CO2 and CO3

To become familiar with problem solving techniques: CO1, CO3, CO4, CO5, CO6 and CO7

Course units and Course outcome mapping:

Unit No.	Unit Name	Course Outcomes						
		CO1	CO2	CO3	CO4	CO5	CO6	CO7
1	Introduction of Computers, Logic and Structure	√	√					
2	The Program Planning Process and Making Decisions	√	√	√				
3	Looping and Control Breaks	√	√	√				
4	Arrays	√	√	√	√			
5	Methods	√	√	√	√	√		
6	Derived Types and File Handling	√	√	√	√	√	√	√

Programme Outcomes:

PO1: Ability to understand the concepts of key areas in computer science.

PO2: Ability to design and develop system, component or process as well as test and maintain it so as to provide promising solutions to industry and society.

PO3: Effective communication and presentation skill.

PO4: Ability to understand professional and ethical responsibility.

PO5: Recognition of the need for life-long learning.

Programme Outcomes and Course Outcomes mapping:

Programme Outcome	Course Outcomes						
	C01	C02	C03	C04	C05	C06	C07
P01	√	√	√	√	√	√	√
P02	√	√	√	√	√	√	√
P03							
P04							
P05	√	√	√	√	√	√	√

Computing Environment: A student must have the following computing environment in laboratory and or on his/her laptop.

- GNU gcc compiler in Ubuntu platform.

Modes of Transaction (Delivery):

Unit No	Topic Detail	Teaching Approach	PO mapped
1	Variables, Data Types and Evolution of Programming Techniques	Reasoning based learning.	P01, P02 and P05
2	Expression evaluation and control structure.	Error finding based learning.	P01,P02 and P05
3	Looping statements	Puzzle based learning.	P01,P02 and P05
4	Searching from Array	Logic understanding with drama.	P01,P02 and P05
5	Method creation and calling	Error finding based learning.	P01,P02 and P05
6	Sequential and Binary Files : Creation, Merging and Updating	Hands on during laboratory hours	P01,P02 and P05

Activities/Practicum:

The following activities shall be carried out by the students:

- Historical study of the Programming languages.
- Sample program practice on Turbo C IDE environment.
- Study of standard header files.

The following activities shall be carried out by the teacher:

Learner	Activities to be done	PO mapped
For slow learners	<ul style="list-style-type: none"> • Programming in pair. • Continuous interaction regarding programming skill improvement in class and laboratory. • Remedial coaching 	P01,P02 and P05
For advanced learners	<ul style="list-style-type: none"> • Programming in pair. 	P01,P02 and

	<ul style="list-style-type: none"> • Error and output exercise preparation. 	P05
For all	<ul style="list-style-type: none"> • 10 minutes question-answer writing practice during lecture hour to improve writing skill. • Group discussion regarding problem or error solving. 	P01,P02 and P05

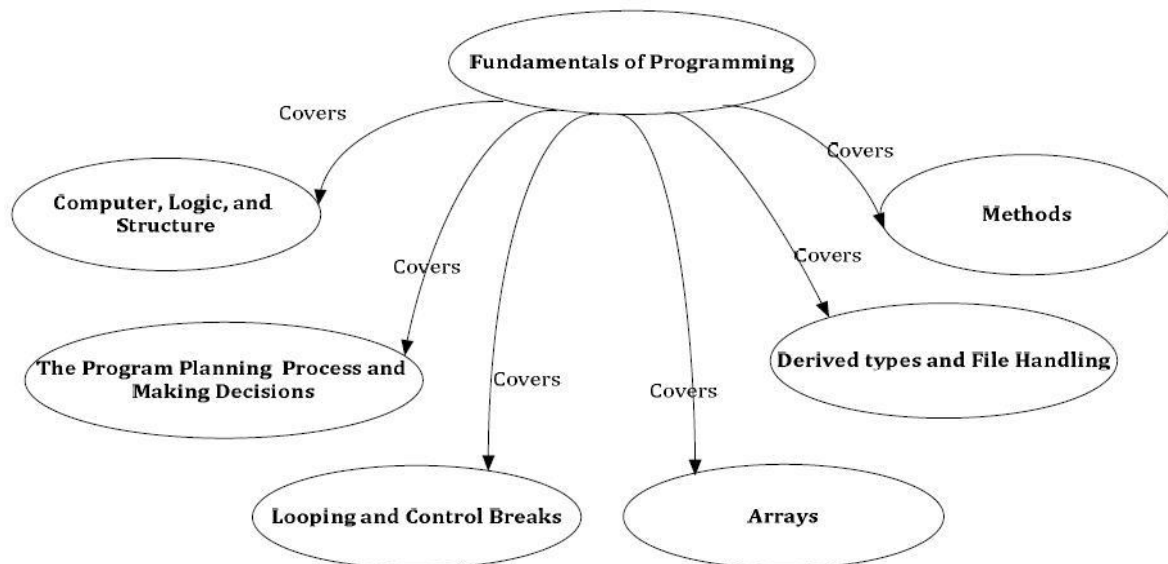
Number of Practical Problems in Journal: 22

Total sets to be developed for each division: 2

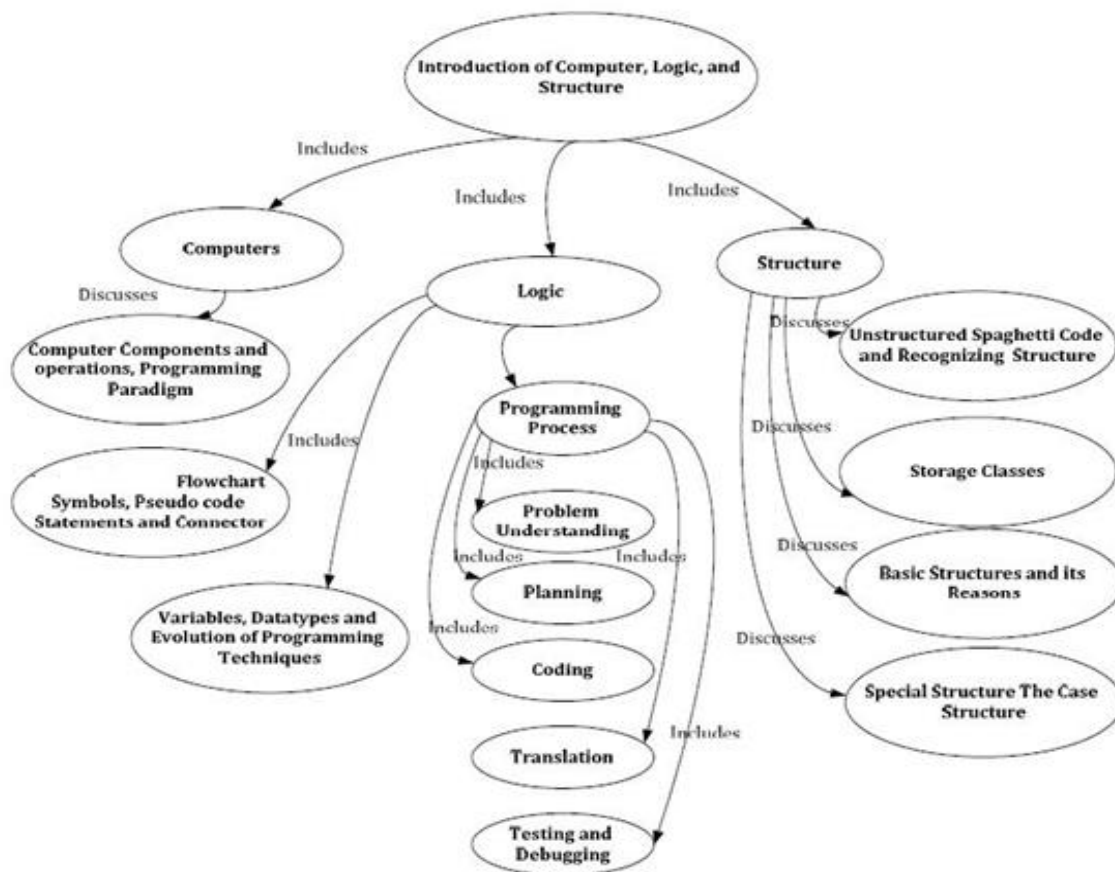
Unit Number	Number of Questions	Time required to implement and debug the question (in hours)	Minimum required of Journal Certification
Unit 1	2	3	2
Unit 2	4	8	4
Unit 3	4	8	4
Unit 4	5	10	5
Unit 5	3	9	3
Unit 6	4	10	4
TOTAL	22	48	22

Concept map:

Course title: CC1- Fundamentals of Programming



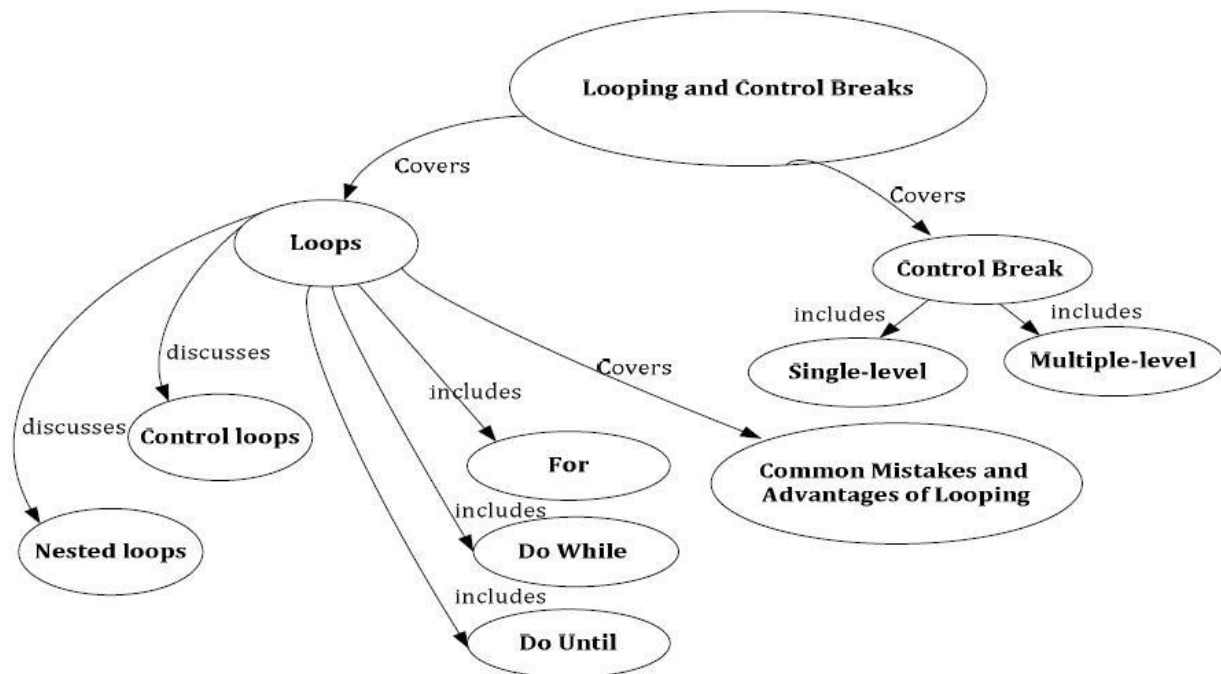
Unit 1: Introduction of Computers, Logic and Structure



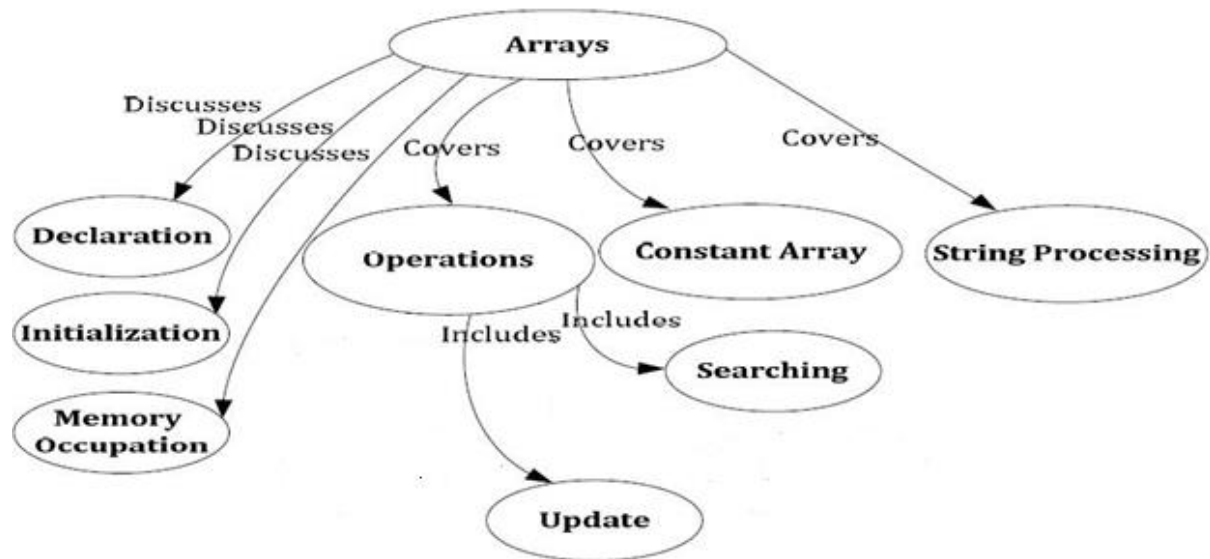
Unit 2: The Program Planning Process and Making Decisions:



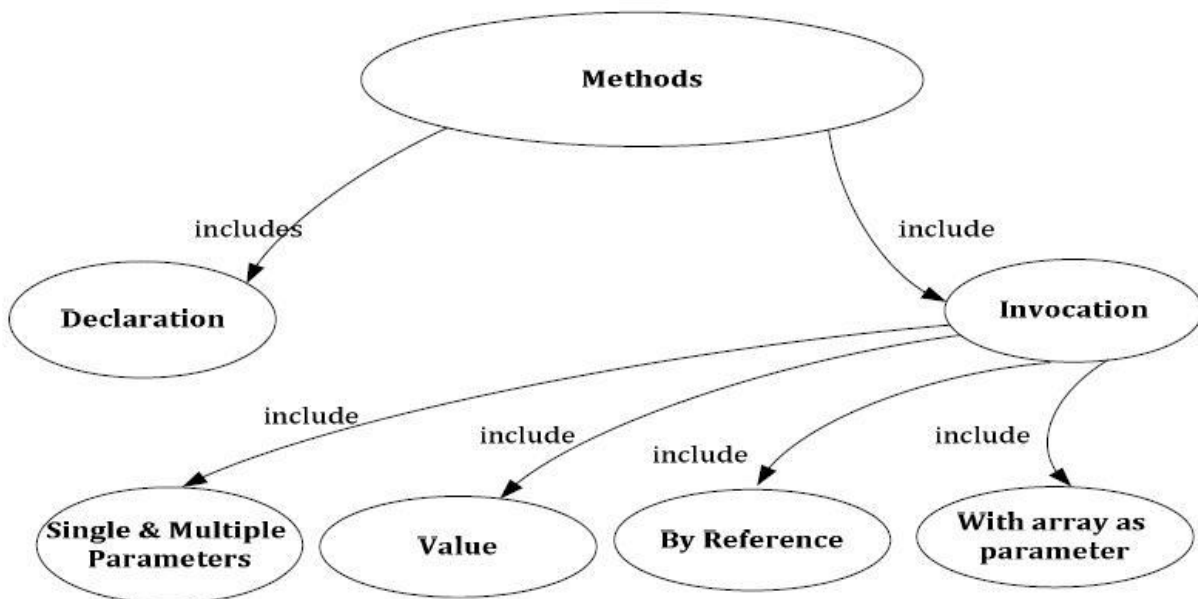
Unit 3: Looping and Control Breaks:



Unit 4: Arrays:



Unit 5: Methods:



Unit 6: Derived Types and File Handling:

