

Ramgarhia Polytechnic College, Phagwara



Electronics & Communication Engineering **Department**

Head of Department:	Er. Simranjit Singh
Name of the Faculty:	Er. Poonam Rana
Discipline:	ECE
Semester:	3rd
Subject:	Computer Programming using C
Lesson Plan Duration:	16 Weeks














RATIONALE

Computers play a vital role in present day life, more so, in the professional life of technician engineers. People working in the field of computer industry, use computers in solving problems more easily and effectively. In order to enable the students use the computers effectively in problem solving, this course offers the modern programming language C along with exposition to various applications of computers. The knowledge of C language will be reinforced by the practical exercises.

Course Outcomes

After undergoing the subject, the students will be able to:

- CO1. Identify the problem and formulate an algorithm for it.
- CO2. Identify various control structures and implement them.
- CO3. Identify various types of variables.
- CO4. Use pointer in an array and structure.
- CO5. Use structures and union for handling data.
- CO6. Explain the concepts of C programming language
- CO7. Explain and implement the language constructs concepts
- CO8. Install C software on the system and debug the programme
- CO9. Explain and execute member functions of C in the programme
- CO10. Describe and implement array concept in C programme
- CO11. Describe and execute pointers

PO ⇒	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO ⇩							
CO1							
CO2							
CO3							
CO4							
CO5							
CO6							
CO7							
CO8							
CO9							
CO10							
CO11							

Syllabus

Units	Details	Hours
1.	Algorithm and Programming Development 1.1 Steps in development of a program 1.2 Flow charts, Algorithm development 1.3 Programme Debugging	(04 hrs)
2.	Program Structure 2.1 I/O statements, assign statements 2.2 Constants, variables and data types 2.3 Operators and Expressions 2.4 Unformatted and Formatted IOS 2.5 Data Type Casting	(8 hrs)
3.	Control Structures 3.1 Introduction 3.2 Decision making with IF – statement 3.3 IF – Else and Nested IF 3.4 While and do-while, for loop 3.5 Break, Continue, goto and switch statements	(8hrs)
4.	Functions 4.1 Introduction to functions 4.2 Global and Local Variables 4.3 Function Declaration 4.4 Standard functions 4.5 Parameters and Parameter Passing 4.6 Call - by value/reference	(08 hrs)
5.	Arrays 5.1 Introduction to Arrays 5.2 Array Declaration, Length of array 5.3 Single and Multidimensional Array 5.4 Arrays of characters 5.5 Passing an array to function	(6hrs)
6.	Pointers 6.1 Introduction to Pointers 6.2 Address operator and pointers 6.3 Declaring and Initializing pointers 6.4 Single pointer 6.5 Pointers to an Array	(06 hrs)
7.	Structures and Unions 7.1 Declaration of structures 7.2 Accessing structure members 7.3 Structure initialization 7.4 Pointer to a structures 7.5 Unions	(08 hrs)

LIST OF PRACTICALS

1. Programming exercises on executing and editing a C program.
2. Programming exercises on defining variables and assigning values to variables.
3. Programming exercises on arithmetic and relational operators.
4. Programming exercises on arithmetic expressions and their evaluation.
5. Programming exercises on formatting input/output using printf and scanf and their return type values.
6. Programming exercises using if statement.
7. Programming exercises using if – Else.
8. Programming exercises on switch statement.
9. Programming exercises on do – while, statement.
10. Programming exercises on for – statement.
11. Programs on one-dimensional array.
12. Programs on two-dimensional array.
13. (i) Programs for putting two strings together.
(ii) Programs for comparing two strings.
14. Simple programs using structures.
15. Simple programs using pointers.
16. Simple programs using union.

Reference Books:

1. Simplified Approach to Programming in C by Dr. Vipin Arora, Eagle Prakashan, Jalandhar
2. Programming in ANSI C by E Balaguruswami, , Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing Co (P) Ltd. New Delhi

Delivery/Instructional Methodologies

Sr.No.	Description
1.	Chalk and Talk

Assessment Methodologies

Sr. No.	Description	Type
1.	Student Assignment	Direct
2.	Test	Direct
3.	Board Examination	Direct
4.	Student Feedback	Direct

Gaps in the syllabus - to meet industry/profession requirements

S.NO.	DESCRIPTION	PROPOSED ACTIONS	PO MAPPING
	N/A	N/A	N/A

Topics beyond syllabus/advanced topics

Units	Details	Hours
N/A	N/A	N/A

Web Source References

Sr. No.	URL
1.	https://nptel.ac.in/

Lesson Plan Duration : 16 weeks (from Aug.2022 to Nov.2022)

Workload (Lecture/Practical) per week (in hours): Lectures-03, Practical-04

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical Day	Topic
1 st	1 st	Steps in development of a program	1	Programming exercises on executing and editing a C program
	2 nd	Algorithm development, Flowcharts.		
	3 rd	Programme Debugging		
2 nd	4 th	I/O statements, assign statements	2	Programming exercises on defining variables and assigning values to variables.
	5 th	Constants, variables and data types		
	6 th	Unformatted and Formatted I/O		
3 rd	7 th	Unformatted and Formatted I/O	3	Programming exercises on arithmetic and relational operators.
	8 th	Operators and Expressions.		
	9 th	Operators and Expressions.		
4 th	10 th	Data Type Casting	4	Programming exercises on arithmetic expressions and their evaluation.
	11 th	REVISION		
	12 th	Introduction to Control Structures		
5 th	13 th	Decision making with IF – statement	5	Programming exercises on formatting input/output using printf () and scanf () and their return type values.
	14 th	IF–Else and Nested IF		
	15 th	While and do-while, for loop		
6 th	16 th	While and do-while, for loop	6	Programming exercises using if statement. If-else statement. Nested if-else statement.
	17 th	Break, Continue, goto statements		
	18 th	switch statements		

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical Day	Topic
7th	19th	REVISION	7	Programming exercises on else-if ladder statement. Switch () statement. goto () statement.
	20th	1st Sessional Test (Tentative)		
	21st	PTM		
8th	22nd	Introduction of functions	8	Programming exercises on for loop, while loop statement.
	23rd	Global and Local Variables		
	24th	Function Declaration Standard Functions		
9th	25th	Parameters and Parameter Passing	9	Programming exercises on do-while loop statement.
	26th	Call by value method		
	27th	Call by reference method		
10th	28th	Introduction to arrays, Array Declaration, Length of array	10	REVISION
	29th	Single dimensional Array		
	30th	Multidimensional Array.		
11th	31st	Multidimensional Array.	11	Simple programs using functions
	32nd	Arrays of characters		
	33rd	Passing an array to function		
12th	34th	REVISION	12	Programs on One-dimensional array.
	35th	2nd Sessional Test (Tentative)		
	36th	PTM		
13th	37th	Declaration of structures	13	Programs on two-dimensional array.
	38th	Accessing structure members		
	39th	Structure initialization		
14th	40th	Pointer to a structures	14	Simple programs using structures and unions
	41st	Unions		
	42nd	Introduction to Pointers		
15th	43rd	Address operator and pointers	15	Programs for putting two strings together. Programs for comparing two strings.
	44th	Declaring and initializing pointers		
	45th	Single Pointer, Pointers to an array		

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Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical Day	Topic
16th	46 th	PTM	16	Simple programs using Pointers
	47 th	REVISION		
	48 th	3 rd Sessional Test (Tentative)		

NBA has defined the following seven POs for an Engineering diploma graduate:

- i) **Basic and Discipline specific knowledge:** Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
- ii) **Problem analysis:** Identify and analyze well-defined engineering problems using codified standard methods.
- iii) **Design/ development of solutions:** Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
- iv) **Engineering Tools, Experimentation and Testing:** Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.
- v) **Engineering practices for society, sustainability and environment:** Apply appropriate technology in context of society, sustainability, environment and ethical practices.
- vi) **Project Management:** Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
- vii) **Life-long learning:** Ability to analyze individual needs and engage in updating in the context of technological changes.

Program Specific Outcomes (PSOs)

PSOs are a statement that describes what students are expected to know and be able to do in a specialized area of discipline upon graduation from a program. Program may specify 2-4 program specific outcomes, if required.

These are the statements, which are specific to the particular 11 program. They are beyond POs. Program Curriculum and other activities during the program must help in the achievement of PSOs along with POs.

