NATIONAL OF TECHNOL	A A WATTA	National Institute of Technology Meghalaya An Institute of National Importance												CURRICULUM		
Program Departm										2024-25						
Course		inputer seri							Credit	L t Structure	Serries	SiGi	Marks Di	larks Distribution		
Code		Course Name Pre-Req						site L	Т	Р	С	INT	MID	END	Total	
CA401	Programming Concepts (with C)						3	0 CO's	0	3	50	50	100	200		
	algorit genera	To introduce the basic architecture of a computer, the concept of algorithm, the basic concepts and terminology of programming in general and concept of functional hierarchical code organization.								Able to explain the basic architectur computer, the concept of algorithm basic concepts and terminology of pin general.			n, and the programming	ming		
Course Objectives	proble To intr	To inculcate the ability to do algorithmic thinking to analyse real-world problems and develop algorithms to solve those. To introduce programming using C language and writing programs in Course Able to develop the ability to do algorithm to analyse a problem and dealgorithm to solve it. Course Able to develop the ability to do algorithm to analyse a problem and dealgorithm to solve it.											develop an	0		
	C on a computer, and edit, compile, debug, correct, recompile and run those. To train the students in choosing right data representation formats CA401.3 implement various algorithms. Able to choose the right data representation formats											sentation	Apply Apply			
	based on a problem specification.								CA401.5	formats based on the requirements of problem. Able to develop programs on a composition debug, correct, recompile and a composition of the requirements of problems.			nputer, edit.			
									those. Able to unde		al Understand					
					Mapping	with P	Program O	l utcomes (P0	CA401.6 Ds)	hierarchical	code organ	ization.	Т	Mapping with PSOs		
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CA401.1 CA401.2	3 2	3	3	2	1 1	1			1	1	1	1	1	1	1	
CA401.3	3	3	3	2	1				1					1	1	
CA401.4	3	1	1	2	_									2	3	
CA401.5	3	2	3	1	3				1					1	1	
CA401.6 CA401	3	2	2	2	4.50	4.00			2	4.00	1.00	1.00	1.00	4.25	1	
	2.83	2.25	2.17	1.80	1.50	1.00		_ SYLLABUS	1.25	1.00	1.00	1.00	1.00	1.25	1.40	
No.						С	ontent						Hours		COs	
Ap Co Pr Iir Co	Introduction Organization of a Computer: Von Neumann architecture; CPU; Memory; RAM; ROM; Hardware; Software; Application Programs; System Programs; Operating Systems; Number Systems. Concept of Programming and Programming Languages: Machine Language; Assembly Language; High-Level Programming language; Compiler; Assembler; Interpreter; Linker; Loader; Compiling a C program in command ine and in an IDE Concept of Algorithm, Flowchart, Pseudo code, Illustrative Problem Solving Examples.										10	CA401.1 CA401.2				
Fe Ty :- Sł Pr ca in	Introduction to C programming language Features of a Programming Language: Character Set; Constants; Escape Sequences; Identifiers; Keywords; Data Types; Data Type Qualifiers; Variables; Declarations; enum; typedef; Operators & Expressions - Binary operators: - Arithmetic Operators, Logical Operators, Relational Operators, Bitwise Operators; Assignment Operator; Shorthand Assignment Operators; Unary Operators; Ternary Operators; Special Operators; sizeof(); Operator Precedence and Associativity in expressions; Data type conversion: coercion (implicit type conversion), type casting (explicit type conversion); Statements: Assignment statements, Input/ Output statements for standard input/ output devices. Flow Control - Conditionals and Branching:- Simple if Statement, if-else Statement, Nested if-else Statement, Ladder structure of if-else, switch-case statement, goto statement; Iteration - while Statement, do-while Statement, for Statement, break and continue. Functions; Function Types - standard library functions, user defined functions; syntax of functions; Arguments and Parameters; Call by Value; Call by Reference; parameterized main function; Storage Classes - auto, register, static, extern; Scope Rule: Variable scope - local, global; Recursion. Arrays - Single Dimensional Arrays, Multi-Dimensional Arrays, Introduction to strings: - Definition of a string, character arrays and strings, pointers and strings, standard library string functions, arrays of strings; Pointers - different types of pointers, pointer arithmetic, pointers and arrays. Structures - creating structures using struct, Arrays in Structures, Array of Structures, Difference between arrays and structures; Unions - creating structures using union, difference between structures and unions. Preprocessor directives and Files - Preprocessor directives: - File inclusion by macro, macros, macros and functions; Basic Input/ Output operations on Files: - Text files and binary files, file opening modes, opening, closing, reading, writing and appending t											32		CA401.3 CA401.4 CA401.5 CA401.6		
La Ite ar st Ar ch di St ar II Pr fu (A	tatic, externays - Sharacter ifferent ty tructures and struct reproces unctions; losing, reprogram	arrays and ypes of post-creating tures; Unices Basic Inpedictions of the post-creating with the post-creating banding and the post-creating banding languages.	pinters, po g structur ons - crea tives and put/ Outp iting and	res using ating struct d Files - out opera appendir	struct, Ar ctures using Preproces tions on F lig to a file.	ng unic sor dir iles :-	Structure on, differe rectives : Text file	nce betweence File inclusions and bina	n structursion by ry files, f	res and union macro, macro, macro, macro, macro file opening	ons. cros, mad modes, d	ros and opening,				

V. Rajaraman, "Fundamentals of Computers", PHI Learning, 6th revised edition, 2014.

3. Yashavant Kanetkar, "Let Us C", BPB Publications, 19th edition, 2022.

Supplementary Readings

- 1. Byron S. Gottfried, "Programming with C", McGraw-Hill Education, 4th edition, 2018.
- 2. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language: ANSI C Version", Pearson Education India, 2nd edition, 2015.
- 3. Darrel L. Graham, "C Programming Language", Createspace Independent Publishing, 1st edition, 2016.