	Analyze										
Level 3	Evaluate Create	40%	-	40%	-	40%	-	40%	-	40%	-
	Total	100 %		100 %		100 %		100 %		100 %	

CLA – 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

Course Designers		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
	1. Prof. Daniel David, Prof & Head, Department of English, MCC, Chennai	*1. Dr. Shanthichitra, Associate Professor, & Head, Department of English, FSH,SRMIST*
		2. Dr K B Geetha, Assistant Professor, Department of English, FSH, SRMIST

Course Code	**USA20101J**	Course Name	**PROGRAMMING FOR PROBLEM SOLVING**	Course Category	**C**	**Professional core**	L	T	P	C
							4	0	4	6

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Science	Data Book / Codes/Standards	Nil		

CLR-1 :	Think and evolve logically
CLR-2 :	Write application code for specific purpose
CLR-3 :	Understand the effectiveness of programming
CLR-4 :	Customizing functions and procedures to encourage reusability
CLR-5 :	Establish interaction between stored files and the application code
CLR-6 :	Solve mathematical, scientific and engineering problems with reduced complexity

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLO-1 :	Apply the features of programming language	2	85	80
CLO-2 :	Choose operators, control structures to solve the problem optimally	3	85	80
CLO-3 :	Analyze the problem thoroughly and choose the prebuilt functions/ customize functions to solve the problem	3	85	80

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
L	H	H	H	H	-	-	M	M	L	-	H	-	-	-

CLO-4 :	Able to use dynamic memory allocation concepts for problems that demand	3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-5 :	Defend the need for files storage and the access privilege modes	3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-6 :	Talk on the data flow	3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-

Duration (Hour)		24	24	24	24	24
S-1	SLO-1	Evolution of Programming Languages	Relational and logical Operators	Understanding contiguous memory allocation	Formal and Actual Parameters	File Types: text and binary
	SLO-2	Problem solving through programming	Character and Numbers: Manipulation	Array : Advantages and Limitations	Functions: Returning values	File operations:basics
S-2	SLO-1	Writing algorithms/pseudo codes	Expressions with pre / post increment operator	String Basics	Advantages of using Functions	File permissions and access privileges
	SLO-2	Drawing flowcharts	Expression with conditional and assignment operators	String Declaration and Initialization	Passing Array to Function	Changing permissions
S-3	SLO-1	Evolution of C language	Ternary operator	Understanding String Functions: gets(), puts(), getchar(), putchar(), printf()	Call by Value	Writing contents to file
	SLO-2	Program structure	L value and Rvalue in expression	String Functions: atoi, strlen, strcat, strcmp	Call by Reference (An introduction on pointers shall be effective)	Reading file contents
S-4	SLO-1	Need for file header files	Operator precedence	String Functions: sprint, sscanf, strrev, strcpy, strstr, strtok	Nested functions	Appending an existing file
	SLO-2	Need for linkers and loaders	Type conversion	Need for tokenization	Functions: advantages and limitations	Difference: Append and write
S 5-8	SLO-1	Laboratory 1: Algorithm, Flow Chart, Pseudo code	Laboratory 4: Operators and Expressions	Laboratory 7: Arrays : Multi dimensional	Laboratory 10: Functions	Laboratory 13: File: reading and writing
	SLO-2					
S-9	SLO-1	Input and output statements: scanf, printf	Control Statements : sequential, branching, looping and jump	Need for user-defined data types	Pointers and address operator	fscanf(),fprintf()
	SLO-2	Variables and identifiers	If, if ..else, else if ladder	Stuctures	sizeof Pointer Variable and Pointer Operator	fseek(),ftell()
S-10	SLO-1	Expressions	nested if, switch case	Unions	Pointer Declaration and dereferencing pointers	fputc(),fgetc()
	SLO-2	Single line and multiline comments	for loop	Accessing members of the structure	void Pointers and sizeof void Pointers	fputs(),fgets()
S-11	SLO-1	Constants, Keywords	while loop	Structure and arrays	Function and call by reference	fputw(),fgetw()

	SLO-2	Literals	do while	Accessing members of the structure	Functions and Returning array(use of pointers)	End_of_file in file handling
S-12	SLO-1	Scope and lifetime of variables	goto, break, continue, exit: Jump statements	Structure and arrays	Structures and pointers :dynamic creation of data structures(list)	feof(), remove()
	SLO-2	Storage clauses	Understanding jump statements with branch and iterative statements	Nested structures	Incrementing Pointers	ferror()
S 13-16	SLO-1 SLO-2	Laboratory 2: Input and Output Statements	Laboratory 5: Control Statements	Laboratory 8: Strings, structures and union	Laboratory 11: Pointers	Laboratory 14: File Handling fputw(),fgetw(),remove();
S-17	SLO-1	Data types classification:Basic,derived,user-defined	Array Basic	Functions declaration and definition	Constant Pointers	Processor Directives
	SLO-2	Numeric Data types: int, float, long, double	Array Declaration, Initialization	Prebuilt and user defined functions	Pointers and strings	include
S-18	SLO-1	Non-Numeric Data types: char and string	Types	Function prototypes	Function Pointers	Predefined macros and macros
	SLO-2	Arithmetic operators	Manipulating one dimensional arrays with indices	Defining and calling functions	Array of Function Pointers	
S-19	SLO-1	Increment and decrement operator	Methods: sort, append, reverse, traverse	Multiple functions	Null Pointers	conditional compilation
	SLO-2	Bitwise and sizeof operator	Manipulating two dimensional arrays with indices	Recursion , recursive Functions	Using sizeof(),malloc,calloc()	#pragma
S-20	SLO-1	Using Boolean	Problems: matrix manipulations	Scope of variables across functions	File Handling	Creating include and macros
	SLO-2	Comma, Arrow and Assignmentoperator	Manipulating more than two dimensions in arrays	Sharing Global variables	Open(),close()	
S 21-24	SLO-1 SLO-2	Laboratory 3: Data Types	Laboratory 6: Arrays – One Dimensional	Laboratory 9: Functions	Laboratory 12: Pointers	Laboratory 15: Creating Macros

Learning Resources	1.Zed A Shaw, (2015), "Learn C the Hard Way: Practical Exercises on the Computational Subjects You Keep Avoiding (Like C)", Addison Wesley 2.W. Kernighan, Dennis M. Ritchie, (1996), "The C Programming Language", 2nd Edition. PrenticeHall of India	3.ebook: Bharat Kinariwala, TepDobry, Programming in C 4.URL: http://www.c4learn.com/learn-c-programming-language/

Learning Assessment											
Bloom's Level of Thinking		Continous Learning Assessment(50% Weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4# (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
	Understand										
Level 2	Apply	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Analyze										
Level 3	Evaluate	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Create										
	Total	100 %		100 %		100 %		100 %		100%	

CLA – 4 can be from any combination of these: Assignments, Seminars, Short Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc

.,**Course Designers**		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
Mr. S. Karthik, IT Analyst, Tata Consultancy Services	Dr. Neelanarayanan,, Professor, School of Computer Science and Engineering, VIT Chennai	1.Mrs. S. Usha, SRMIST 2.Dr. P.J.Arul Leena Rose 3. Dr.J.Padmavathi

Courrse Code	**USA20102J**	Course Name	**DIGITAL LOGIC FUNDAMENTALS**	Course Category	**C**	**Professional Core**	L	T	P	C
							4	0	2	5

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Science	Data Book / Codes/Standards	Nil		