	National Institute of Technology Meghalaya An Institute of National Importance	**CURRICULUM**

Programme	**Bachelor of Technology in Computer Science and Engineering**	Year of Regulation	**2019-20**
Department	**Computer Science and Engineering**	Semester	**II**

Course Code	Course Name	Credit Structure				Marks Distribution		
		L	T	P	C	Continuous Evaluation	Quiz/ Viva	Total
CS152	**Computing Lab**	**0**	**0**	**2**	**1**	**70**	**30**	**100**

Course Objectives		Course Outcomes		
	To introduce programming using C language and to write programs in C on a computer, and to edit, compile, debug, correct, recompile and run those.		CO1	**Able to explain the basic concepts and terminology of programming in general.**
	To inculcate the ability to do algorithmic thinking to analyse real-world problems and develop algorithms to solve those.		CO2	**Able to do algorithmic thinking to analyse a problem and develop an algorithm to solve it.**
	To train the students in choosing right data representation formats based on a problem specification.		CO3	**Able to use the C programming language to implement various algorithms.**
			CO4	**Able to choose the right data representation formats based on the requirements of the problem.**
			CO5	**Able to write programs on a computer, edit, compile, debug, correct, recompile and run those.**
			CO6	**Able to understand the concept of functional hierarchical code organization.**

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	3	0	1	0	1	0	0	0	0	1	1	1	0	0	0
2	CO2	2	3	3	2	1	1	0	0	1	0	0	0	0	1	0
3	CO3	3	3	3	2	1	0	0	0	1	0	0	0	0	3	0
4	CO4	3	2	1	2	0	0	0	0	0	0	0	0	0	1	0
5	CO5	3	0	3	2	3	1	0	0	1	0	0	0	0	2	0
6	CO6	3	2	2	2	0	0	0	0	2	0	0	0	0	1	0

SYLLABUS

No.	Content	Hours	COs
	1. C program to print the paragraph as shown below: " Hello World " % Hello World % \\ Hello World \\ 2. C program to print the result of the following arithmetic expression where a=4, b= 5. $\frac{5a + ab^2}{\sqrt{a^2+9}}$	**02**	
	3. C program to check a given number is odd or even and positive or negative. 4. C program to read three numbers and find the greatest one.	**02**	
	5. C program to read five numbers and find the second smallest number. 6. C program to find GCD and LCM of two numbers.	**02**	**CO1**
	7. C program to store ten numbers in an array and find the largest and smallest. 8. C program to store N numbers in an array and count the total positive, negative, odd and even numbers [0 < N < 11].	**02**	**CO2**
	9. C program to check whether a given number is prime or not. 10. C program to print first N numbers of Fibonacci series.	**02**	**CO3**
	11. C program to find a key from n numbers using sequential search (Linear search), and if found, show the position. 12. Implementation of an algorithm to insert an element at any arbitrary position in an array of integer numbers and also the implementation of an algorithm to display the condition of the array before and after insertion.	**02**	**CO4** **CO5**
	13. Implementation of an algorithm to delete an element in an array of integer numbers and also the implementation of an algorithm to display the condition of the array before and after deletion. 14. Implementation of an algorithm to reverse the elements of an array of integer numbers and also the implementation of an algorithm to display the condition of the array before and after reversal.	**02**	**CO6**
	15. C program to solve Tower of Hanoi problem for n disks. 16. C program to generate n Fibonacci numbers using both recursive and non-recursive methods.	**02**	
	17. C program to implement a swap function to swap the values of two variables. 18. C program to store the name, roll number, marks and grades of 5 students using array of structure.	**02**	
	19. C program to create a file named "StudentDatabase" and storing the name, roll number, phone number and average marks of N students, where N is a natural number between 2 to 10.	**02**	
Total Hours		**20**	

Essential Readings

1. E. Balagurusamy, "Programming in ANSI C", McGraw-Hill Education, 6th edition, 2019.
2. V. Rajaraman, "Fundamentals of Computers", PHI Learning, 6th revised edition, 2014.
3. Yashavant Kanetkar, "Let Us C", BPB Publications, 16th edition, 2017.

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.