



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department	:	Computer Science & Engg			
Course Name & code	:	Data Structures & CSE 2152			
Semester & branch	:	Third sem & Computer Science & Engg			
Name of the faculty	:	Dr U Dinesh Acharya, Dr Harish S V, Mr Shivaprasad G, Mr Giridhar N S			
No of contact hours/week:		L	T	P	C
		3	1	0	4

Course Outcomes (COs)

<i>At the end of this course, the student should be able to:</i>		No. of Contact Hours	Marks
CO1:	Associate real world representation of information using structures and recursions.	10 Hrs	20
CO2:	Solve real world problems using concepts like queues and stacks.	10 Hrs	22
CO3:	Understand and solve real world problems using linked list concepts.	12 Hrs	24
CO4:	Analyze Non-Linear Data Structures such as Trees.	10 Hrs	22
CO5:	Choose the appropriate data structure for solving real world problems.	6 Hrs	12
Total		48 Hrs	100

Assessment Plan

Components	Assignments	Sessional Tests	End Semester/ Make-up Examination
Duration	20 to 30 minutes	60 minutes	180 minutes
Weightage	20 % (4 X 5 marks)	30 % (2 X 15 Marks)	50 % (1 X 50 Marks)
Typology of Questions	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation	Knowledge/ Recall; Understanding/ Comprehension; Application	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation
Pattern	Answer one randomly selected question from the problem sheet (Students can refer their class notes)	MCQ: 10 questions (0.5 marks) Short Answers: 5 questions (2 marks)	Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks
Schedule	4, 7, 10, and 13 th week of academic calendar	Calendared activity	Calendared activity
Topics Covered	Quiz 1 (L 1-10 & T 1-2) (CO1)	Test 1 (L 1-20 & T 1-5) (CO1-2)	Comprehensive examination covering full syllabus. Students are expected to answer all questions (CO1-5)
	Quiz 2 (L 11-20 & T 3-5) (CO2)		
	Quiz 3 (L 21-30 & T 6-8) (CO3)	Test 2 (L 21-40 & T 6-10) (CO3-4)	
	Quiz 4 (L 31-40 & T 9-11) (CO4)		

Lesson Plan

L. No.	Topics	Course Outcome Addressed
L0	Introduction to the course	CO1
L1	Pointers, Accessing variables through pointers, pointer declaration and definition initialization of pointer variables	CO1
L2	Pointers for inter function communication, pointers to pointers	CO1
L3	Arrays and pointers, pointer arithmetic and arrays	CO1
L4	Tutorial-1: Passing an array to a function, memory allocation functions, array of pointers	CO1
L5	The type definition, enumerated types	CO1
L6	Structures: structure type declaration, initialization, accessing, operations	CO1
L7	Complex structures, Arrays of structures, Unions	CO1
L8	Tutorial-2: Algorithm Specification, Introduction	CO1
L9	Recursive algorithm	CO1

L10	Examples using system stack	CO1
L11	Stacks	CO2
L12	Tutorial-3: Stacks using Dynamic Arrays	CO2
L13	Queues	CO2
L14	Circular Queues	CO2
L15	Circular Queues using Dynamic Arrays	CO2
L16	Tutorial-4: Evaluation of Expression	CO2
L17	Application : infix, postfix and prefix expressions	CO2
L18	Multiple stacks & queues	CO2
L19	Priority queues & their representations	CO2
L20	Tutorial-5: Input/Output restricted queues	CO2
L21	Singly linked list and Chains	CO3
L22	Representing Chains in C	CO3
L23	Linked Stacks	CO3
L24	Tutorial-6: Linked Queues	CO3
L25	Polynomials	CO3
L26	Circular list representation of polynomials	CO3
L27	Additional list Operations	CO3
L28	Tutorial-7: Operations for circularly linked lists	CO3
L29	Sparse matrices - representation	CO3
L30	Sparse matrices - input	CO3
L31	Sparse matrix output, erasing	CO3
L32	Tutorial -8: Doubly linked lists	CO3
L33	Applications using linked lists	CO5
L34	Applications using linked lists	CO5
L35	Terminology, representation of trees	CO4
L36	Tutorial-9: Binary trees, properties	CO4
L37	binary tree representation	CO4
L38	binary tree traversal	CO4

L39	binary tree traversal	CO4
L40	Tutorial-10: Traversal without a stack	CO4
L41	additional binary tree operations	CO4
L42	threaded binary trees - inorder traversal	CO4
L43	threaded binary trees - inserting a node	CO4
L44	Tutorial-11: Binary search trees	CO4
L45	Optimal Binary Search Trees	CO5
L46	Red-Black Trees	CO5
L47	m-way Search trees	CO5
L48	Tutorial-12: B-trees	CO5
L/T	Click or tap here to enter text.	

References:

1. Behrouz A. Forouzan, Richard F. Gilberg "A Structured Programming Approach Using C", 3rd Edition, Cengage Learning India Pvt. Ltd, India, 2007
2. Ellis Horowitz, Sartaj Sahni , Susan Anderson and Freed, " Fundamentals of Data Structures in C", 2nd Edition, Universities Press, India, Reprint 2011.
3. Richard F. Gilberg, Behrouz A. Forouzan, "Data structures, A Pseudocode Approach with C", 2nd Edition, Cengage Learning India Pvt. Ltd, India , 2009
4. Tenenbaum Aaron M., Langsam Yedidyah, Augenstein Moshe J., "Data structures using C", 1st Edition, Pearson Prentice Hall of India Ltd., 2007.
5. Debasis Samanta, "Classic Data Structures", 2nd Edition, PHI Learning Pvt. Ltd., India, 2010
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Submitted by: HARISH S V

(Signature of the faculty)

Date: 27-07-2019

Approved by: DR. ASHALATHA NAYAK

(Signature of HOD)

Date: 30-07-2019

FACULTY MEMBERS TEACHING THE COURSE (IF MULTIPLE SECTIONS EXIST):

FACULTY	SECTION	FACULTY	SECTION
Mr. Shivaprasad G	A		
Dr. Harish S V	B		
Mr. Giridhar N S	C		
Dr. U Dinesh Acharya	D		
