SCHEME OFCOURSE WORK
Department of Information Technology

CourseDetails:

COURSETITLE	DATA STRUCTURES LAB		
COURSE CODE	15CT1106	LT P C	0 0 3 2
PROGRAM	B.TECH		
SPECIALIZATION	IT		
SEMESTER	III		
PRE REQUISITES	COMPUTERPROGRAMMINGTHROUGH C		
COURSES TO WHICHITISA PREREQUISITE	N/A		

CourseOutcomes(COs):

1 Developprogramsusingrecursivefunctions.
2 Implementstacksandqueuesusingarrays
3 DevelopProgramsforsearchingandsortingalgorithms
4 Developprogramsusingconceptsoftrees.
5 Applyconceptsofgraphs

ProgramOutcomes (POs):

A graduate of Information Technology will be able to

PO-1	Abilitytoapplytheknowledgeofmathematics,science,engineeringfundamentalsandprinciplesofInformationTechnologytosolveproblemsindifferentdomains.
PO-2	Abilitytoanalyzeaproblem,identifyandformulatethecomputingrequirementsappropriatetoitssolution.
PO-3	Abilitytodesign&developsoftwareapplicationsthatmeetthedesiredspecificationswithintherealistic constraintstoservetheneedsofthesociety.
PO-4	Abilitytodesignand conductexperiments,aswellastoanalyzeandinterpretdata

Week	Topic/Contents	CourseOutcomes	SamplePrograms	Teaching learning strategy	Assessment method& schedule

PO-5	Abilitytouseappropriatetechniques&toolstosolveengineeringproblems.
PO-6	Abilitytoapplytheknowledgetoanalyzeandunderstandsocietal,health,safety,legal,andculturalissuesrelevanttotheInformationTechnologypractices.
PO-7	Abilitytoanalyzethelocalandglobalimpactofcomputingonindividualaswellasonsociety.
PO-8	Abilitytodemonstrateprofessionalethicalpracticesandsocialresponsibilitiesinglobalandsocietalcontexts.
PO-9	Abilitytofunctioneffectivelyasanindividual,andasamemberorleaderindiverseandmultidisciplinaryteams.
PO-10	Abilitytocommunicateeffectivelywiththeengineeringcommunityandwithsocietyatlarge
PO-11	Abilitytounderstandengineeringandmanagementprinciplesandapplythesetoone'sown work,asa memberandleaderinateam, tomanageprojects.
PO-12	Abilitytorecognizetheneedforupdatingtheknowledgeinthechosenfieldandimbibinglearningtolearnskills.

CourseOutcomeversusProgramOutcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3		3	3	3					2		3	3	2	
CO2		3	2			2		2			2		3	2	
CO3	3	3	3	3	3							3	3	2	
CO4		2		2								2	3	2	
CO5	3	3	3	3	3		2		2			3	3	2	
S-Stronglycorrelated,M-Moderatelycorrelated,Blank-Nocorrelation															

1	WriteCprogramsthatusesrecursivefunctionto:i)Computefactorialofagivennumberii)Solvethe towersofHanoiproblem	CO1	1. Cprogramtofindfactorialusing recursion. 2. Cprogramtofindtowersof Hanoiproblem	Programming	Viva-1LabInternal-1
2	WriteCprogramsthatimplementthefollowingdatastructuresusingarrays:i)Stackii)Queue	CO2	WriteCprogramsthatimplementadatastructureusingarrays:Stackandqueue.	Programming	Viva-2LabInternal-1
3	WriteCprogramstoimplementthefollowingStackapplicationsi)Factorial ii)Evaluationsofpostfixexpression	CO2	WriteCprogramstoimplementthefollowingStackapplicationsi)Factorial ii)Evaluationsof postfixex pression	Programming	Viva-3LabInternal-1
4	WriteCprogramtoimplementthefollowingtypesofqueuesi)PriorityQueueii)CircularQueue.	CO2	WriteCprogramtoimplementthefollowingtypesofqueuesi)PriorityQueueii)CircularQueue	Programming	Viva-4LabInternal-1
5	WriteCprogramstoimplementthefollowingtypesofListsi)Singlylinkedlistii)CircularlyLinkedlist iii)Doublylinkedlist.	CO3	WriteCprogramstoimplement i)Singlylinkedlistii)circularlyLinkedlist	Programming	Viva-5LabInternal-1

6	WriteCprogramstoimplementthfollowingdatastructuresusingListsi)Stackii)Queue.	CO3	WriteCprogramstoimplementthfollowingdatastructuresusingListsi)Stackii)Queue.	Programming	Viva-6LabInternal-1
7	WriteCprogramstoimplementthefollowingsearchalgorithms:i)LinearSearchii)BinarySearch iii)FibonacciSearch	CO2	WriteCprogramtoimplementi)Linearsearchii)Binarysearchiii)Fibonaccisearch	Programming	Viva-7LabInternal-1
8	WriteCprogramstoimplementthefollowingsortingalgorithmsi)BubbleSortii)InsertionSort iii)SelectionSort.	CO2	WriteCprogramstoimplementthefollowingsortingalgorithmsi)BubbleSortii)	Programming	Viva-8Lab Internal-1

			InsertionSort iii)SelectionSort.		
	TEST-I				
9	WriteCprogramstoimplementthefollowingsortingalgorithmsi)MergeSortii)QuickSort.	CO2	WriteCprogramstoimplementthefollowingsortingalgorithms i) MergeSort ii) QuickSort.	Programming	Viva-10LabInternal-2
10	WriteaCprogramtoimplementbinarytreeusingarraysandtoperformbinarytreetraversalsi)in-Orderii)postorderiii)preorder.	CO3	Cprogramto performbinary treetraversals i) in-Order ii) post-order iii) preorder.	Programming	Viva-11Lab Internal-2
11	WriteaCprogramtoperformthefollowingoperationsusinglinkedlists:i)insertanelementintoabinary searchtree.ii)Deleteanelementfromabinarysearchtree.iii)Searchforakeyelementinabinarysearchtree	CO3	WriteaCprogramtoperformthefollowing operationsusinglinkedlists:Searchforakeyelementinabinarysearchtr	Programming	Viva-12Lab Internal-2

12	WriteaCprogramtoperformthefollowingoperationsusinglinkedlists:i)Insertanelementintoan AVLtree.ii)DeleteanelementfromanAVLtree	CO3	WriteaCprogramtoperformthefollowing operationsusing linked lists:i)InsertanelementintoanAVLtree.ii)DeleteanelementfromanAVLtree	Programming	Viva-13Lab Internal-2
13	Write C programsfortheimplementationofDFS andBFSforagivengraph.	CO4,CO5		Programming	Viva-14Lab Internal-2
14	WriteaCprogramfortheimplementation ofPrim'salgorithmtoobtaintheminimumcostspanningtreefromaconnectedundirectedgraph.	CO4		Programming	Viva-15Lab Internal-2
15	WriteaCprogramtoimplementDijkstra'salgorithmforthesinglesource shortestpathproblem	CO5		Programming	Viva-16LabInternal-2
16	Programpractice&Doubts	---		Programming	
17	TEST-2				

Teaching-Learning&Evaluation

AssessmentMethods	InternalLab:25Marks DailyPerformance&Evaluation:25Marks