LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I), ISO 9001:2015 Certified Institution

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : J.GeethaRenuka/D.VijayaSri/Dr.K.Lavanya /Dr.A.V.N.Reddy/Mr.K.Phaneendra

Course Name & Code : DATA STRUCTURES LAB & 20CS53

L-T-P Structure : 0-0-3 **Credits:** 1.5

Program/Sem/Sec : B.Tech/II/A-Sec. **A.Y.:** 2021-22

PREREQUISITE: C Programming Language

COURSE OBJECTIVE:

The objective of this course is to make students familiar with writing algorithms to implement different data structures like stacks, queues, trees and graphs, and various sorting techniques

COURSE OUTCOMES (CO):

CO1: Implement Linear Data Structures using array and Linked list. (**Apply - L3**)

CO2: Implement Various Sorting Techniques. (**Apply - L3**)

CO3: : Implement Non-Linear Data Structure such as Trees &Graphs. (**Apply - L3**)

CO4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos, Pos & PSOs):

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1		2	1		1										
CO2		2	1		1										
CO3		2	1		1										
CO4								2	2	2					

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign
1.	Introduction & List using Arrays	3	04-05-2022		**TLM5**	
2.	Linked List Programs	12	11-05-2022 18-05-2022 25-05-2022 01-06-2022		**TLM5/VLab**	
3.	Stack, Queue Using Arrays, Linked List	6	08-06-2022 15-06-2022		**TLM5**	
4.	Infix to Postfix, Evaluation of Postfix Expression	3	22-06-2022		**TLM5/VLab /code tantra**	
5.	Circular Queue Double Ended Queue	3	29-06-2022		**TLM5**	
6.	Bubble sort Selection sort Insertion sort	3	06-07-2022		**TLM5/VLab**	
7.	Merge sort Quick sort	3	13-07-2022		**TLM5**	
8.	Heap sort Binary Tree	3	20-07-2022		**TLM5**	
9.	Binary Search Tree	3	27-07-2022		**TLM5/VLab**	
10.	BFS,DFS	3	03-08-2022		**TLM5/VLab/code tantra**	
11.	Lab Internal Exam	3	10-08-2022		**TLM5**	

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	To inculcate an ability to analyze, design and implement data driven applications into the students
PSO 3	Develop an ability to implement various processes/methodologies/practices employed in design, validation, testing and maintenance of software products.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**J.GeethaRenuka**	**J.GeethaRenuka**	**Dr. S. Naganjaneyulu**	**Dr. B. Srinivasa Rao**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : D.VijayaSri/J.GeethaRenuka/ Dr.B.SrinivasaRao /Dr.S.Naganjaneyalu/Dr.K.Lavanya

Course Name & Code : DATA STRUCTURES LAB & 20CS53

L-T-P Structure : 0-0-3 **Credits:** 1.5

Program/Sem/Sec : B.Tech/II/B-Sec. **A.Y.:** 2021-22

PREREQUISITE: C Programming Language

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The objective of this course is to make students familiar with writing algorithms to implement different data structures like stacks, queues, trees and graphs, and various sorting techniques

COURSE OUTCOMES (CO):

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CO2: Implement Various Sorting Techniques. (**Apply - L3**)

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CO3		2	1		1										
CO4								2	2	2					

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

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COURSE DELIVERY PLAN (LESSON PLAN):

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3.	Stack, Queue Using Arrays, Linked List	6	06-06-2022 13-06-2022		**TLM5**	
4.	Infix to Postfix, Evaluation of Postfix Expression	3	20-06-2022		**TLM5/VLab /code tantra**	
5.	Circular Queue Double Ended Queue	3	27-06-2022		**TLM5**	
6.	Bubble sort Selection sort Insertion sort	3	04-07-2022		**TLM5/VLab**	
7.	Merge sort Quick sort	3	11-07-2022		**TLM5**	
8.	Heap sort Binary Tree	3	18-07-2022		**TLM5**	
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10.	BFS,DFS	3	01-08-2022		**TLM5/VLab/code tantra**	
11.	Lab Internal Exam	3	08-08-2022		**TLM5**	

PART-C

PROGRAMME OUTCOMES (POs):

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Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**D.VijayaSri**	**J.GeethaRenuka**	**Dr. S. Naganjaneyulu**	**Dr. B. Srinivasa Rao**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr K.Raviteja
Course Name & Code : Mathematical Applications Lab
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., I.T., II-Sem. A Sec A.Y : 2021-22

PRE-REQUISITE: Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Students will be able to learn the basic usage of MATLAB/SCI Lab or some other open-source tools to solve basic mathematical problems.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Identify basic elements of programming structures. (Understand – L2)
CO 2	Implement elementary mathematical operations using MATLAB/ SCI Lab or some other open-source tools. (Apply-L3)
CO 3	Implement the binary operations using MATLAB/ SCI Lab or some other open-source tools. (Apply-L3)
CO 4	Improve individual / team work skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	3	-	-	-	-	-	-	2	2	-	-
CO2	3	2	1	-	3	-	-	-	-	-	-	2	-	-	1
CO3	3	2	1	-	3	-	-	-	-	-	-	2	-	-	1
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	2	10/5/2022		**TLM4**	
2.	To know the history and features of MATLAB.	2	10/5/2022		**TLM4**	
3.	To know the local environment and basic commands of MATLAB.	2	17/5/2022		**TLM4**	
4.	To know the history and features of SCI LAB.	2	24/5/2022		**TLM4**	
5.	To know the local environment and basic commands of SCI LAB.	2	31/5/2022		**TLM4**	
6.	Perform elementary mathematical operations like addition, subtraction, multiplication, and division.	2	07/06/2022		**TLM4**	
7.	Perform elementary logical operations.	2	14/06/2022		**TLM4**	
8.	Perform basic operations on matrices (like addition, subtraction, multiplication) and display specific rows or columns of the matrix.	2	28/06/2022		**TLM4**	
9.	Perform Incrementing and Decrementing operation.	2	05/07/2022		**TLM4**	
10.	Perform elementary Bitwise operations.	2	12/07/2022		**TLM4**	
11.	Write a program to implement Array arithmetic operations.	2	19/07/2022		**TLM4**	
12.	Write a program to implement Multidimensional view of data.	2	19/07/2022		**TLM4**	
13.	Implement the basic statistical operations with the help of MATLAB / SCILAB.	2	26/07/2022		**TLM4**	
14.	Implement the Trigonometric Functions with the help of MATLAB / SCILAB.	2	26/07/2022			
15.	Implement the conditional statements with the help of MATLAB/ SCILAB.	2	02/08/2022		**TLM4**	
16.	Evaluate the expression $a^3 + \sqrt{bd} - 4c$ where a=1.2, b=2.3, c=4.5 and d=4.	2	02/08/2022		**TLM4**	
17.	**Lab Internal**		09/08/2022			
No. of classes required: 32				No. of classes taken:		

20/06/2022 to 25/06/2022 MID-I Examination

15/08/2022 to 20/08/2022 MID-II Examination

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Day-to-day work (D)	5
Internal test (M)	5
Record(R)	5
Cumulative Internal Examination (CIE) : D+M+R	15
Semester End Examination (SEE)	35
Procedure/Algorithm	5
Experimentation/Program execution	10
Observations/Calculations/Validation	10
Result/Inference	5
Viva voce (V)	5
Total Marks = CIE + SEE	50

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Course Instructor	Module Coordinator	HOD
(Mr.K.Raviteja)	(Mrs.K.Lavanya)	(Dr. B.Srinivasa Rao)

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr K.Raviteja
Course Name & Code : Mathematical Applications Lab
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., I.T., II-Sem. B Sec A.Y : 2021-22

PRE-REQUISITE: Mathematics

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CO2	3	2	1	-	3	-	-	-	-	-	-	2	-	-	1
CO3	3	2	1	-	3	-	-	-	-	-	-	2	-	-	1
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
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PART-B

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S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
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3.	To know the local environment and basic commands of MATLAB.	2	11/5/2022		**TLM4**	
4.	To know the history and features of SCI LAB.	2	18/5/2022		**TLM4**	
5.	To know the local environment and basic commands of SCI LAB.	2	25/5/2022		**TLM4**	
6.	Perform elementary mathematical operations like addition, subtraction, multiplication, and division.	2	01/06/2022		**TLM4**	
7.	Perform elementary logical operations.	2	08/06/2022		**TLM4**	
8.	Perform basic operations on matrices (like addition, subtraction, multiplication) and display specific rows or columns of the matrix.	2	15/06/2022		**TLM4**	
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13.	Implement the basic statistical operations with the help of MATLAB / SCILAB.	2	27/07/2022		**TLM4**	
14.	Implement the Trigonometric Functions with the help of MATLAB / SCILAB.	2	27/07/2022			
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17.	**Lab Internal**		10/08/2022			
No. of classes required: 32				No. of classes taken:		

20/06/2022 to 25/06/2022 MID-I Examination

15/08/2022 to 20/08/2022 MID-II Examination

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
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TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
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Internal test (M)	5
Record(R)	5
Cumulative Internal Examination (CIE) : D+M+R	15
Semester End Examination (SEE)	35
Procedure/Algorithm	5
Experimentation/Program execution	10
Observations/Calculations/Validation	10
Result/Inference	5
Viva voce (V)	5
Total Marks = CIE + SEE	50

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