



COURSE PLAN

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|---------------------------|---|--|---|---|---|
| Department | : | Department of Information and Communication Technology | | | |
| Course Name & code | : | Data structures & ICT 2153 | | | |
| Semester & branch | : | IIISem & CCE | | | |
| Name of the faculty | : | Dr Manjula Shenoy K | | | |
| No of contact hours/week: | | L | T | P | C |
| | | 3 | 1 | 0 | 4 |

Course Outcomes (COs)

At the end of this course, the student should be able to:

| | | No. of Contact Hours | Marks |
|-------|---|----------------------------|-------|
| C01: | Relate the concepts of arrays, dynamic memory management, class, searching, sorting | 11 | 11 |
| C02: | Illustrate the working of linear and non-linear data structure | 21 | 22 |
| C03: | Apply the appropriate data structure to solve realworld problems | 16 | 17 |
| C04: | Click or tap here to enter text. | Hrs. | Marks |
| C05: | Click or tap here to enter text. | Hrs. | Marks |
| Total | | 48 | 50 |

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 1-9 & T 1-2) (CO1,2,3) | Test 1 (L 1-15 & T 1-5) (CO1,2,3) | Comprehensive examination covering full syllabus. Students are expected to answer all questions (CO1-3) |
| | Quiz 2 (L 10-15 & T 3-5) (CO2,3) | | |
| | Quiz 3 (L 16-22 & T 6-7) (CO2,3) | Test 2 (L 16-30 & T 6-10) (CO1,2,3) | |
| | Quiz 4 (L 23-30 & T 8-10) (CO1,2,3) | | |

Lesson Plan

| L. No. | Topics | Course Outcome Addressed |
|--------|--|--------------------------|
| L0 | Introduction | CO1 |
| L1 | Introduction to data structures | CO1 |
| L2 | Arrays, Functions, Searching | CO1 |
| L3 | Insertion sort bubble sort, selection sort | CO1 |
| T1 | Programs on above topics | CO1 |
| L4 | Classes and objects | CO1 |
| L5 | ADT-Abstract Data Types Performance analysis and measurement | CO1 |
| L6 | Stacks | CO2 |
| T2 | Programs on above topics | CO3 |
| L7 | Evaluation of Arithmetic expressions | CO3 |
| L8 | Conversion of Arithmetic expressions | CO3 |

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| L9 | Recursion, Multiple stacks | C03 |
| T3 | Programs on above topics | C03 |
| L10 | Linear Queues | C02 |
| L11 | Circular Queue and applications | C02 |
| L12 | Sparse matrix introduction | C02 |
| T4 | Problems on above topics | C02 |
| L13 | Sparse Transpose techniques | C02 |
| L14 | Pointers and dynamic memory allocation | C02 |
| L15 | Singly linked list operations | C02 |
| T5 | Problems on above related topics | C02 |
| L16 | Polynomial Representation | C03 |
| L17 | Polynomial operation using singly linked list | C03 |
| L18 | Doubly linked lists | C02 |
| T6 | Problems on linked lists | C03 |
| L19 | Dynamically linked stacks and queues | C03 |
| L20 | Circular lists | C03 |
| L21 | Linked list applications | C03 |
| T7 | Problems on linked lists | C03 |
| L22 | Review of linked lists | C02&3 |
| L23 | Tree Terminologies | C02 |
| L24 | Binary tree | C02 |
| T8 | Strictly binary tree, complete binary trees | C02 |
| L25 | Memory representation of binary tree | C02 |
| L26 | Tree traversals recursive | C02 |
| L27 | Tree traversals non recursive | C02 |
| T9 | Problems on trees | C03 |
| L28 | Expression trees | C03 |
| L29 | Binary Search trees, decision trees | C03 |
| L30 | Applications of Binary tree | C03 |

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| T10 | Problems such as copying ,checking for binary tree equality | CO2 |
| L31 | Threaded binary trees,Heaps | CO2 |
| L32 | Graphs | CO2 |
| L33 | Depth First Search, Breadth First Search | CO2 |
| T11 | Problems-Connected components and spanning trees | CO3 |
| L34 | Quick Sort,Merge sort | CO1 |
| L35 | Heap Sort | CO1 |
| L36 | Radix sort | CO1 |
| T12 | Review problems | CO1 |
| L/T | Click or tap here to enter text. | |

References:

1. Ellis Horowitz, SartajSahni, Dinesh Mehta, Fundamentals of Data Structures in C++, 2nd Edition, GalgotiaPublications, Reprint 2013
2. Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, 2nd Edition, Pearson Education, 2005.
3. Michael T, Goodrich, Roberto Tamassia, David Mount, Data Structures and Algorithms in C++, 2nd Edition, John Wiley & Sons, 2011
4. Ellis Horowitz, Sartaj Sahni, Dinesh Mehta, Fundamentals of Data Structures in C, 2nd Edition Universities Press (India) Private Limited, Reprint, 2013
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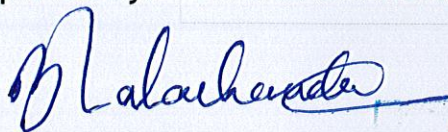
Submitted by: **DR MANJULA SHENOY K**



(Signature of the faculty)

Date: **26-07-2019**

Approved by: DR BALACHANDRA



(Signature of HOD)

Date: 26-07-2019

Dr. Balachandra
Professor & Head
Dept. of Information &
Communication Technology
M.I.T., Manipal - 576 104

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

| FACULTY | SECTION | FACULTY | SECTION |
|----------------|---------|---------|---------|
| Mr Akshay K.C. | A | | |
| Mrs Veena K M | B | | |
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