



UNIVERSITI TEKNOLOGI MARA
KAMPUS SUNGAI PETANI
Scheme of Work

Course & Code : Fundamental of Data Structure (CSC 248)
Program & Code : Diploma in Computer Science (CS110)
Course Status : Core
Pre-Requisite : Object Oriented Programming / CSC238
Credit : 3
Contact Hour : 5
Lecturer : Zanariah Idrus

Course Outcome : Upon completion of this course, students should be able to:

1. Explain the concept of primitive and abstract data type (ADT) data specification and abstraction
2. Implement and apply the fundamental data structures using primitive and Abstract Data Types (ADTs)
3. Implement and apply the general data structures: Sequential List and Linked list
4. Use the specific data structures: Stack and Queue
5. Implement and apply various types of tree operations.

Course Description : In this course, we attempt to understand the concept of information organization and manipulation in a computer to emphasize the use of data structure in problem solving. An object-oriented approach will be taught to develop the programming solutions.

Compiler : Java

Evaluation : Continuous Assessment

- Test 1 – 10%**
 - **WEEK 7 -20 APR 2018**
- Test 2 – 10%**
 - **WEEK 14 -11 JUN 2018**
- Assignments/Lab Test - 10%**
- Quizzes – 10%**
- Project – -10%**
- Final – 50%**

Textbook : To be announced

Scheme of Work

Week	Lecture Hours	Lab Hours	Blended Learning	Topic	Remarks
1	1	0	1	Topic 1: Introduction to Data Structure <input type="checkbox"/> Abstract Data Type Concept <input type="checkbox"/> Data Structure Concept <input type="checkbox"/> Application of Data Structures <input type="checkbox"/> Implementation of Generic classes	
1	1	1	1	Topic 2: Sequential List <input type="checkbox"/> Basic Sequential List Concept	
2 - 3	5	3	1	Topic 2: Sequential List <input type="checkbox"/> Implementation of Sequential List <input type="checkbox"/> Application of Sequential List	
4	2	1	1	Topic 3: Linked List <input type="checkbox"/> Basic Linked List concept <input type="checkbox"/> Concept in variation of linked list: double linked list and circular linked list	Week 4 Quiz 1 Array List
4-6	4	3	1	Topic 3: Linked List <input type="checkbox"/> Implementation of Linked List <input type="checkbox"/> Application of Linked List	Week 5 Assignment1: ArrayList
MID SEMESTER BREAK 25 MAY 2018 – 2 JUNE 2018					
6	2	0	1	Topic 4: Queue <input type="checkbox"/> Basic Queue concept	
7-8	2	4	1	Topic 4: Queue <input type="checkbox"/> Queue implementation and application	Week 8 Linked list
8	2	1	1	Topic 5: Stack <input type="checkbox"/> Basic Stack concept	Week 8 Test1 : Topic 1,2,3,4
9	3	2	1	Topic 5: Stack <input type="checkbox"/> Stack implementation and application	
10	2	1	1	Topic 5: Stack <input type="checkbox"/> Arithmetic Expression (Infix, Postfix and Prefix) in stack application	Assignment2:
11	1	1	1	Topic 6: Tree <input type="checkbox"/> Concept of Recursion and Recursive Functions	Week 11 Stack & Queue
11-12	1	2	1	Topic 6: Tree <input type="checkbox"/> Basic Tree Concept <input type="checkbox"/> Type of tree: Complete Binary Tree, Almost Complete Binary Tree, Strictly Binary Tree <input type="checkbox"/> Expression Tree	Week 12 Project Binary Search Tree
12-13	2	1	1	Topic 6: Tree <input type="checkbox"/> Binary Search Tree (BST) Concept	

13-14	2	4	1	Topic 6: Tree <input type="checkbox"/> Implementation and application of BST	Week 13 Quiz 2 Test 2: Topic 5 & 6
Project Submission (W14) 10TH – 14TH JUNE 2018					

OTHER REFERENCES

1. Michael T. Goodrich and Roberto Tamassia, Data structures and Algorithms in Java, 6, John Wiley, 2014, ISBN: n/a
2. Narashimha Karumanchi, Data Structure and Algorithms Made Easy in Java : data Structures and Algorithmic puzzles:,2, CareerMonk Publications, 2011, ISBN: n/a
3. Guzdial, Mark., Problem solving with Data structures using Java:a multimedia approach,, Prentice Hall, 2011, ISBN: n/a
4. Mark Allen Weiss, Data Structures and Problem Solving Using Jav, 4, Addison-Wesley, 2010, ISBN: n/a
5. Hubbard, J.R, Schaum's outline of data structures with Java, 2, McGraw-Hill, 2009, ISBN: n/a
6. Goldman, Sally A., A practical guide to data structures and algorithms using Java,, Chapman&Hall,, 2008, ISBN: n/a
7. Elliot B. Koffman, Paul A.T. Wolfgang, Data Structures: Objects, Abstraction and Des, John Wiley, 2007, ISBN: n/a
8. J.Collins, William, Data Structures and the JAVA Collections Fram, 2, McGraw Hill, 2005, ISBN:
9. Mark Allenweiss, Data Structures and Problem Solving Using Java,, 3, Addison-Wesley, 2005, ISBN: n/a
10. David A. Watt, Deryck F. Brown & Dave Watt,, Java Collections: An Introduction to Abstract Data Types, Data Structures and Algorithms, John Wiley,, 2003, ISBN: n/a
11. Malik, D.S., Data Structures Using Thomson Learning, 2003, ISBN: n/a Java,,