Syllabus

Course ID/Title: 01286222 Data Structures and Algorithms

Fundamental of solving problems using data structures including linked lists, trees, stacks, queues, hash tables, and graphs. Algorithms for sorting, searching, and other fundamental operations. Introduction to foundations for analysis of iterative and recursive algorithms. Implementation of selected algorithms using object-oriented paradigm.

Instructor: Suntana Oudomying (suntana.ou@kmitl.ac.th)

Time: Wed. (9:00 – 12:00), Fri. (09:00 – 12:00) **Venue:** TBA **Office Hour:** by appointment

Objectives:

CLO-1 Understand and use the process of abstraction in problem solving.

CLO-2 Analyze step by step and develop algorithms to solve real world problems.

CLO-3 Implementing basic data structures and algorithms.

CLO-4 Understanding various searching and sorting techniques

Materials

class slides

Tentative Plan

wk	Lecture	Lab	Date	
1	Introduction to ADT, java collections	Java collection review		
2	Analysis of data structures and algorithms	Prime Number		Public Holiday
3	Array	Runtime analysis		
4	Linked List	Linked List		
5				
6	Stack	Reverse Polish Notation		
7	Queue	Shunting Yard		
8	Recursion, Memoization.	Min Coin Change		
10	Sorting 1	Collections.sort(), generic, sorting		
11	Sorting 2	Block_merge_sort		
12	Heap and Priority Queue	MyMinHeap.java		
13	Binary Search Tree	MyBST.java		
14	Balance Binary Search Tree	MyBST.java		
15	review			
16	Graph 1	DFS		
17	Graph 2 / Hashing	Shortest path		

Grading policy: TBA

Teaching Assistants: