CA522 DATA AND FILE STRUCTURES

Prerequisite: CA521, a basic course in programming, or approval from instructor.

Aim: This is a first level course that describes various structuring methods of data, their practical use and introduces the concepts of external data storage schemes.

Course Content:

Module I: Fundamental Notations: Primitive and Composite Data types, Time and Space Complexity of Algorithms, Sorting Algorithms.

 Data Structures: Stacks, Queues, Arrays, Linked Lists, Trees and Graphs.

Module II: Fundamental File Structure Concepts; Organizing Files for Performance; Keysorting; Indexing; Consequential Processing and the Sorting of Large Files; B-Trees and Other Tree-structured File Organizations; The B+ Tree Family and Indexed Sequential File Access; Hashing; Extendible Hashing.

Course format: Lectures, Tutorials and Programming assignments.

Books:

1. Wirth, Nicolaus: Algorithms + Data structures = Programs. Prentice-Hall International, 1975.
2. Horowitz, E., and Sahni.S: Fundamentals of Data structures. Computer Science Press, 1978.
3. Knuth, D.: The Art of Computer Programming, Vols. 1-2. Addison-Wesley, 1970-80.
4. Aho, A. V., Hopcroft, and Ullman, J.E.: Data Structures with Pascal, Prentice-Hall International, 1985.

5. Tanenbaum, A.M., and Augenstein, M.J.: Data Structures with Pascal, Prentice-Hall International, 1985.
6. Stubbas, D.: Data Structures with Abstract Data Types and Modula2, Brooks & Cole Pub. Co. 1987.
7. Trembley & Sorenson: An Introduction to Data Structures with Applications; Tata McGraw Hill.
8. Kruse, R. L, Leung, B. P., and Tondo, C. L: Data Structures and Program Design in C; Prentice-Hall
of India, 1999.
9. Weiss, M. A.: Data Structures and Algorithm Analysis in C++; Addison-Wesley, 1994.
10. Michael J. Folk and Bill Zoellick, "File Structures" (Second Edition).