COURSE DETAIL

PARALLEL AND DISTRIBUTED ALGORITHMS
Country Singapore
Host Institution National University of Singapore
Program(s) National University of Singapore
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Computer Science
UCEAP Course Number 148
UCEAP Course Suffix
UCEAP Official Title PARALLEL AND DISTRIBUTED ALGORITHMS
UCEAP Transcript Title COMPUTNG ALGORITHMS
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description
This course examines fundamental issues in parallel computing (i.e., shared-memory algorithms) and distributed computing (i.e., message passing algorithms), and the relationships between the two. It covers various classic problems in parallel/distributed computing, how to design algorithms to solve these problems, and how to prove the correctness of the algorithms. It also looks at various impossibility results in parallel/distributed computing, as well as how to develop impossibility proofs for simple problems. The topics include mutual exclusion, semaphores, consistency, wait-free synchronization, logical time, global state, consistent snapshots, message ordering, consensus, fault-tolerance, transactions, and self-stabilization. This is a pure algorithm/theory module and does not involve explicit programming (to avoid overlapping with CS3211, which focuses on programming). However, the students need to construct proofs based on code, and also potentially write code (on paper) to specify protocols.

Language(s) of Instruction
English

Host Institution Course Number
CS4231

Host Institution Course Title
PARALLEL AND DISTRIBUTED ALGORITHMS

Host Institution Course Details

Host Institution Campus

Host Institution Faculty

Host Institution Degree

Host Institution Department
Computer Science

Course Last Reviewed

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