COURSE DETAIL

RANDOMIZED ALGORITHMS
Country Denmark
Host Institution University of Copenhagen
Program(s) University of Copenhagen
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Computer Science
UCEAP Course Number 170
UCEAP Course Suffix
UCEAP Official Title RANDOMIZED ALGORITHMS
UCEAP Transcript Title RANDOM ALGORITHMS
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description
In this course applications for randomization in many areas are considered, e.g., graph algorithms, machine learning, distributed computing, and geometry, but the focus is on the general understanding, the goal being to give the students the foundation needed to understand and use randomization, no matter what application area they may later be interested in. The course covers the relevant combinatorial probability theory and randomized techniques in algorithms, including: Game Theoretic Techniques; Moments and Deviations; Tail Inequalities; The Probabilistic Method; Markov Chains and Random Walks; Randomized Data Structures; Randomized Geometric Algorithms; Randomized Graph Algorithms; Randomized Distributed and Parallel Algorithms. Students learn to: prove bounds on the expected running time of randomized algorithms; explain methods for bounding the probability that a random variable deviates far from its expectation; apply the probabilistic method to prove the existence of e.g. algorithms; give algorithmic applications of random walks; give simple and efficient algorithms and data structures using randomization where more traditional deterministic approaches are more cumbersome or less efficient.

Language(s) of Instruction
English

Host Institution Course Number
NDAK14005U

Host Institution Course Title
RANDOMIZED ALGORITHMS (RA)

Host Institution Course Details

Host Institution Campus
Science

Host Institution Faculty

Host Institution Degree

Host Institution Department
Computer Science

Course Last Reviewed

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