COURSE DETAIL

PARALLEL AND CLUSTER COMPUTING
Country Ireland
Host Institution University College Dublin
Program(s) University College Dublin
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Computer Science
UCEAP Course Number 117
UCEAP Course Suffix
UCEAP Official Title PARALLEL AND CLUSTER COMPUTING
UCEAP Transcript Title PARALLEL & CLUSTER
UCEAP Quarter Units 4.00
UCEAP Semester Units 2.70

Course Description
Nowadays, parallel architectures are not only used for high performance computing. The advent of multicore processors, which can be found in all modern desktops, laptops, mobile, and embedded devices, has turned parallel architectures into the mainstream architecture for commodity computing. Correspondingly, parallel programming paradigm is becoming the predominant one in the mainstream programming practice. The course introduces parallel programming and covers the following topics: vector and superscalar processors: architecture and programming model, optimizing compilers (dependency analysis and code generation), array libraries (BLAS), and parallel languages (Fortran 90); shared-memory multi-processors and multicore CPUs: architecture and programming models, optimizing compilers, thread libraries (Pthreads), and parallel languages (OpenMP); distributed-memory multi-processors: architecture and programming model, performance models, message-passing libraries (MPI), parallel languages (HPF); and hybrid parallel programming for clusters of mutlicore CPUs with MPI+OpenMP.

Language(s) of Instruction
English

Host Institution Course Number
COMP30250

Host Institution Course Title
PARALLEL AND CLUSTER COMPUTING

Host Institution Campus
UC Dublin

Host Institution Faculty

Host Institution Degree

Host Institution Department
Computer Science

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