Visiting professor Dimitris Nikolopoulos gives the seminar "Implementation of Multi-core programming models: advanced topics"

**Date:** Thursday, 24. May 2012

Implementation of Multi-core programming models: advanced topics (3 ECTS)
Prof Dimitris Nikolopoulos (Queen's University, Belfast UK)

**DATES:**
May 24th to May 25th from 15:00 to 18:00 h. room D6-004
May 29th to June 1st from 15:00 to 18:00 h. room D6-004
June 4th and 5 th from 15:00 to 17:00 h. room C6-E106
(Please note that May 28 th is a festivity)

Course topics:
The course discusses selected advanced topics concerning the implementation of high-level parallel programming languages and models, for multi-core computing systems. We will explore implementation aspects of programming models that exploit various forms of structured or unstructured parallelism, using high-level language abstractions or directives. We will focus on programming models that expose a shared, global address space to programmers, which hides explicit communication from programmers (such as OpenMP, Cilk, TBB, task-based dataflow execution models, and Partitioned Global Address Space languages). The topics covered in the course concern mainly the implementation of the language’s runtime system.

The specific topics that the course discusses include:
- Efficient synchronization algorithms and mechanisms
- Scheduling for performance, locality and other optimization criteria
- Speculative execution
- Energy-efficient implementation of the runtime system
- Scalable memory management
- Memory models and programming model semantics
- Correctness and debugging issues
- Fault-tolerance and reliability
- Deterministic execution

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