Technology
Arts Sciences
TH Köln

Course
PAP - Parallel Programming

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General information

Long name	Parallel Programming
Approving CModule	PAP_MaMT, PAP_MaTIN
Responsible	Prof. Dr.-Ing. Arnulph Fuhrmann Professor Fakultät IME
Level	Master
Semester in the year	summer semester
Duration	Semester
Hours in self-study	78
ECTS	5
Professors	Prof. Dr.-Ing. Arnulph Fuhrmann Professor Fakultät IME
Requirements	The exercises require programming knowledge and the use of console-oriented programs in Linux-based operating systems.
Language	German, English if necessary
Separate final exam	Yes

Final exam

Details

In a final examination (written, optional oral), the students demonstrate their knowledge and competences summarily. The examination includes exemplary parts of the course.

Minimum standard

Achieving the individual minimum score per exam, typically 50% of the maximum score.

Exam Type

In a final examination (written, optional oral), the students demonstrate their knowledge and competences summarily. The examination includes exemplary parts of the course.

Lecture

Learning goals

Knowledge

- Basic concepts, models and technologies of parallel processing (parallelism, concurrency, SISD, SIMD, MISD, MIMD, loose- and closely coupled systems, distributed systems)
- Parallel performance measures (speedup, efficiency)
- Architecture of GPUs
- Parallel Algorithms for GPUs

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2
Tutorial (voluntary)	0

Separate exam

none

Practical training

Learning goals

Skills

- Analyze and structure tasks related to programming parallel programs, assign relevant parallel hardware architecture and transfer to parallel design
- Implement parallel programs (multicore hardware with threads and GPUs)
- Analyze parallel programs using suitable tools and present results in a comprehensible way
- Estimate and analyze performance of parallel programs
- Derive information from original English sources and standards

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	2
Tutorial (voluntary)	0

Separate exam

Exam Type

solving exercises within limited functional / methodical scope

Details

The principles, models, methods, technologies and tools conveyed in the lecture will be deepened and practiced in the practical course on the basis of current tasks in the context of media-based and/or interactive systems. The students work independently on the exercises.

Minimum standard

80% of the exercise tasks has been successfully completed.