

## Course

# PAP - Parallel Programming

---

Version: 2 | Last Change: 01.10.2019 15:54 | Draft: 0 | Status: vom verantwortlichen Dozent freigegeben

### ^ General information

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