### Module title
Advanced Programming

### Abbreviation
10-I-APR-172-m01

### Module coordinator
holder of the Chair of Computer Science II

### Module offered by
Institute of Computer Science

### ECTS
5

### Method of grading
numerical grade

### Only after succ. compl. of module(s)
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### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
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### Contents
With the knowledge of basic programming, taught in introductory lectures, it is possible to realize simpler programs. If more complex problems are to be tackled, suboptimal results like long, incomprehensible functions and code duplicates occur. In this lecture, further knowledge is to be conveyed on how to give programs and code a sensible structure. Also, further topics in the areas of software security and parallel programming are discussed.

### Intended learning outcomes
Students learn advanced programming paradigms especially suited for space applications. Different patterns are then implemented in multiple languages and their efficiency measured using standard metrics. In addition, parallel processing concepts are introduced culminating in the use of GPU architectures for extremely quick processing.

### Courses
(V (2) + Ü (2))

### Method of assessment
written examination (approx. 60 to 120 minutes).
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

### Allocation of places
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### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)
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### Module appears in
- Bachelor’ degree (1 major) Computer Science (2017)
- Bachelor’ degree (1 major) Computer Science (2019)
- Module studies (Bachelor) Computer Science (2019)
- Master’s degree (1 major) Nanostructure Technology (2020)
- Master’s degree (1 major) Physics (2020)
- Master’s teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
- Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
- Bachelor’ degree (1 major) Business Information Systems (2020)
- Master’s degree (1 major) Physics International (2020)
- Master’s degree (1 major) Quantum Engineering (2020)
- Bachelor’ degree (1 major) Computer Science und Sustainability (2021)
- Master’s degree (1 major) Quantum Technology (2021)