

Course

WEB1 - Web Engineering 1 (Backend)

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^ General information

Long name	Web Engineering 1 (Backend)
Approving CModule	WEB1_BaMT
Responsible	NN Lehrbeauftragter
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr.-Ing. Luigi Lo Iacono ehemaliger Professor Fakultät IME
Requirements	<ul style="list-style-type: none">- Knowledge and competence in the development of computer programs and in the handling of a programming language (e.g. Java, Python or Go) as well as common development tools (e.g. IDE) are assumed.- Knowledge and skills in relation to basic algorithms (sorting, searching) and data structures (lists, sets, maps) are required.- Knowledge and skills in IP-based computer networks and in the handling of HTTP are required.
Language	German, English if necessary
Separate final exam	Yes

Final exam

Details

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

^ Lecture / Exercises

Learning goals

Knowledge

- Anatomy of Web-based systems (reference model)
 - Architectural patterns (MVC and variations)
 - Architectural styles (SOA, REST)
 - Backend concepts of web-based systems (3-tier and variations)
 - Backend components (server operating systems, Web server, template engine, request router, caches, logging)
 - Backend technologies (XML, JSON, OpenAPI, standard software)
 - Protocols (HTTP, WebSockets, SPDY, QUIC) and forms of communication (polling, long polling)
 - Present and create relations and dependencies between backend systems/components and frontend systems/components.
 - Web application security (authentication, common vulnerabilities and resulting attacks, SQL injection, cross-site scripting, vulnerability causes and countermeasures)
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Skills

- Analyse and structure tasks in the environment of web-based developments, assign relevant standards and transfer them to system designs
- Implementing backend systems/components of a Web-based system
- Explain backend systems/components, tasks and technical parameters, and structure them
- Analyze backend systems/components using suitable tools and present results in a comprehensible manner
- Planning, setting up and operating backend systems/components
- Estimate and analyze the performance of backend systems
- Derive information from original English sources and standards

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2
Exercises (whole course)	1
Exercises (shared course)	0

Separate exam

none

^ Practical training

Learning goals

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Skills

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Expenditure classroom teaching

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

Separate exam

Exam Type

interview (discussion) about special issues in scenario, project assignment or literature research

Details

Several appointments have to be attended. In each appointment, independently developed solutions to subtasks are to be presented in the technical discussion, if necessary with the use of assistance and/or completion of missing or wrong solution parts. The subtasks add up to the total solution of the development task accompanying the lecture (both parts WEB1 and WEB2).

Minimum standard

Successful participation in 80% of all appointments. Correct solution of all subtasks and complete implementation of the web application (development task accompanying the lecture).