Technology
Arts Sciences
TH Köln

Course Manual WEB2

Web Engineering 2 (Frontend)

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− General information

Long name	Web Engineering 2 (Frontend)
Approving CModule	WEB2_BaMT
Responsible	NN Lehrbeauftragter
Valid from	winter semester 2022/23
Level	Bachelor
Semester in the year	winter semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr.-Ing. Luigi Lo Iacono ehemaliger Professor Fakultät IME

Literature

Gerti Kappel, Birgit Pröll, Siegfried Reich: Web Engineering, John Wiley & Sons, 2006

Brian P. Hogan: HTML5 & CSS3, O'Reilly, 2011

Stefan Koch: JavaScript: Einführung, Programmierung und Referenz, Dpunkt, 2011

Web-Links auf einschlägige Standards und vorlesungsspezifische Schwerpunktsetzungen (z.B. Go, Python, Frameworks)

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	EN Klausur

Requirements	- 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 required. - 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. - Knowledge and skills in the analysis, design, implementation, evaluation and operation of web-based backend systems are required.
Language	German, English if necessary
Separate final exam	Yes

Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	- Anatomy of Web-based systems (reference model) - Architecture pattern (client-side MVC) - Frontend concepts of web-based systems (SPA. hybrid App, PWA) - Frontend Components (browser, browser add-ons, browser cache, local storage, service worker) - Frontend technologies (HTML, CSS, JavaScript, DOM, XHR, HTML5 APIs) - Protocols (WebSockets, WebRTC) and forms of communication (polling, long-polling) - Present and create relationships and dependencies between frontend systems/components and backend systems/components
Skills	- Analyse and structure tasks in the environment of web-based developments, assign relevant standards and transfer them to system designs - Implementing frontend systems/components of a Web-based system - Explain frontend systems/components, tasks and technical parameters, and structure them - Analyzing frontend systems/components using suitable tools and presenting results in a comprehensible manner - Planning, setting up, and operating frontend systems/components - Estimate and analyze performance of frontend systems - Derive information from original English sources and standards

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2

Special requirements

none

Accompanying material	Lecture slides, lecture exercises, web resources, tutorials, open source tools and technologies
Separate exam	No

Exercises (whole course)	1
Exercises (shared course)	0
Tutorial (voluntary)	0

Practical training

Learning goals

Goal type	Description
Knowledge	- Anatomy of Web-based systems (reference model) - Architecture pattern (client-side MVC) - Frontend concepts of web-based systems (SPA. hybrid App, PWA) - Frontend Components (browser, browser add-ons, browser cache, local storage, service worker) - Frontend technologies (HTML, CSS, JavaScript, DOM, XHR, HTML5 APIs) - Protocols (WebSockets, WebRTC) and forms of communication (polling, long-polling) - Present and create relationships and dependencies between frontend systems/components and backend systems/components
Skills	- Analyse and structure tasks in the environment of web-based developments, assign relevant standards and transfer them to system designs - Implementing frontend systems/components of a Web-based system - Explain frontend systems/components, tasks and technical parameters, and structure them - Analyzing frontend systems/components using suitable tools and presenting results in a comprehensible manner - Planning, setting up, and operating frontend systems/components - Estimate and analyze performance of frontend systems - Derive information from original English sources and standards

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	2

Special requirements

none

Accompanying material	Server, Web resources, tutorials, open source tools, frameworks and libraries
Separate exam	Yes

Separate exam

Exam Type	undefined
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).

Tutorial (voluntary)	0