School of **Business**
Department of **Business Information Systems**

DHBW
Duale Hochschule
Baden-Württemberg

Developing Distributed Systems (W3WI_110)

FORMAL INFORMATION ON THE MODULE

MODULE #	LOCATION IN THE COURSE OF STUDY	MODULE DURATION (SEMESTER)	SEMESTER	LANGUAGE
W3WI_110	2nd academic year	1	Spring Term	English

FORMS OF TEACHING USED

Lecture, exercise, laboratory exercise, inverted classroom

FORMS OF EXAMINATION USED

EXAMINATION PERFORMANCE	EXAM DURATION (IN MINUTES)	GRADING
Portfolio	See examination regulations	yes

WORKLOAD AND ECTS CREDITS

TOTAL WORKLOAD (IN H)	OF WHICH ATTENDANCE TIME (IN H)	OF WHICH SELF-STUDY (IN H)	ECTS CREDIT POINTS
150	55	95	5

QUALIFICATION OBJECTIVES AND COMPETENCIES

PROFESSIONAL COMPETENCE

Students know the basic core concepts of concurrency and internet communication as well as the current technologies and tools for the design and implementation of web applications based on these concepts.
Students know the technical fundamentals, concepts, architectures and technologies of distributed systems and applications as well as the common methods, tools, frameworks and design patterns for the development of distributed applications.
Students can apply the concepts, tools and methods of web programming and autonomously design, implement and test web applications.

METHODOLOGICAL COMPETENCE

Students can apply the concepts, tools and methods of distributed system development and design, implement and test simple distributed applications using frameworks and design patterns.

PERSONAL AND SOCIAL COMPETENCE

Students can independently develop distributed application architectures. They can argue cogently and appropriately about concepts, their own designs and their implementations as well as the associated problems, present their own implementations plausibly and justify any errors to others in a comprehensible manner.

OVERARCHING COMPETENCE

Students can independently discuss, evaluate and apply current methods of analysis, design and implementation of distributed systems and applications for operational problems.

LEARNING UNITS AND CONTENT

TEACHING AND LEARNING UNITS	PRESENCE TIME	SELF-STUDY
Web programming	33	57

LEARNING UNITS AND CONTENT

TEACHING AND LEARNING UNITS	PRESENCE TIME	SELF-STUDY
Core contents: - Methods and tools for the development of web applications: e.g. modeling and implementation tools, integrated development environments, frameworks, architectures, infrastructure - Transfer protocols and APIs between client and server (e.g. HTTP, HTTPS, WebSockets, XMLHttpRequest, Fetch API) - HTML, CSS, JavaScript as client-side web technologies and current APIs (e.g. HTML5 and related technologies) - Communication between individual components of web-based applications - Optimization of websites for different target systems Additional content: - Consolidation of frameworks - Case study on RESTful web services - Dynamic server-side generation of web pages		
Distributed systems	22	38
Core contents: - Terminology, concepts, architectures, requirements profiles and architecture models for distributed systems - Design and implementation approaches - Comparison of different middleware concepts - Synchronous and asynchronous communication, remote method call (RMI, RPC, web services with REST/SOAP) - Asynchronous communication and messaging systems - Security aspects in distributed systems Additional content: - Case study on Java Enterprise Edition with Enterprise Java Beans and database connection with OR mapping - Name services - Time and global states in distributed systems - Distributed object systems		

SPECIAL FEATURES

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PREREQUISITES

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LITERATURE

- Coulouris, G., Dollimore, J. and Kindberg,T.: Distributed Systems: Concepts and Design, Addison-Wesley, Amsterdam.
- Tanenbaum, A. S. and Van Steen, M.: Distributed Systems: Principles and Paradigms, Pearson Studium, Munich, Boston.