

Module Handbook (<https://modhb.uni-kl.de/>)

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Module INF-22-02-M-6

Middleware for Heterogeneous and Distributed Information Systems (M, 8.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
INF-22-02-M-6	<i>Middleware for Heterogeneous and Distributed Information Systems</i>	8.0 CP (240 h)

Basedata

CP, Effort	8.0 CP = 240 h
Position of the semester	1 Sem. in WiSe
Level	[6] Master (General)
Language	[DE/EN] German or English as required
Module Manager	Deßloch, Stefan, Prof. Dr. (PROF DEPT: INF) (/staff/504/)
Lecturers	Deßloch, Stefan, Prof. Dr. (PROF DEPT: INF) (/staff/504/)
Area of study	[INF-INSY] Information Systems
Reference course of study	[INF-88.79-SG] M.Sc. Computer Science (/mhb/FB-INF/cos-536/)
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
4V+2U	INF-22-02-K-6 (/mhb/courses/INF-22-02-K-6/)	P	-	PL1	8.0	WiSe

- About [INF-22-02-K-6] (/mhb/courses/INF-22-02-K-6/): Title: "Middleware for Heterogeneous and Distributed Information Systems"; Presence-Time: 84 h; Self-Study: 156 h

Examination achievement PL1

- Form of examination: **oral examination (20-60 Min.)**
- Examination Frequency: Examination only within the course
- Examination number: 62201 ("Middleware for Heterogeneous and Distributed Information Systems")

Evaluation of grades

The grade of the module examination is also the module grade.

Contents

From [INF-22-02-K-6] **Middleware for Heterogeneous and Distributed Information Systems** (/mhb/courses/INF-22-02-K-6/):

- Architecture of distributed information systems and transaction systems
- DB-Gateways
- Distributed transaction processing and management (transactional RPCs, X/Open DTP)
- Application server middleware (transactions, performance, object persistence and queries)
- Message-oriented middleware (asynchronous transactions, message queuing, message brokering)
- Web services (foundations, extensions for robust web services, coordination and transactions)
- Business process middleware (modelling, workflow management systems, transactional workflows, web service orchestration and choreography)
- Web-based information systems
- Concepts for interoperability and integration (distribution, heterogeneity, autonomy, transparency)
- Virtual data integration (federated DBMS, Multi-DBMS, Wrappers and Mediators)
- Materialized data integration (data replication, data warehousing, data transformation/Extract-Transform-Load)
- Concepts and techniques for integration planning (schema matching, mapping , integration, model management)

Competencies / intended learning achievements

Students...

- can understand and explain the architecture of distributed information systems and transaction systems,
- can explain and compare the important features and use of different classes of middleware to realize transaction systems,
- can elaborate the challenges of integrating data from multiple data sources and describe and compare realization strategies for integration systems,
- can explain, compare and evaluate classes of middleware for virtual and materialized data integration,
- can explain, position, compare and apply important techniques and methods for integration planning

Literature

From [INF-22-02-K-6] **Middleware for Heterogeneous and Distributed Information Systems** (/mhb/courses/INF-22-02-K-6/):

- Bernstein, Philip A., Newcomer, Eric: Principles of Transaction Processing (2nd Edition), Morgan Kaufmann Publ., 2009
- additional references will be announced in the lecture

Requirements for attendance of the module (informal)

None

- Notice: Some Courses have informal requirements for attendance:
 - #A: [INF-22-02-K-6] Middleware for Heterogeneous and Distributed Information Systems (4V+2U, 8.0 LP) (P: Obligatory) (/mhb/courses/INF-22-02-K-6/#teilnahmevor-5606)

Requirements for attendance of the module (formal)

None

References to Module / Module Number [INF-22-02-M-6]

Course of Study	Section	Choice/Obligation
[INF-88.79-SG] M.Sc. Computer Science (/mhb/FB-INF/cos-536/)	[Specialisation] Specialization 1	[WP] Compulsory Elective

Module-Pool	Name
[INF-SIAK-DT-CS-MPOOL-6 (/mhb/modulepools/INF-SIAK-DT-CS-MPOOL-6/)]	SIAK Certificate "Digital Transformation" - Modules INF "Computer Science"
