

Advanced Information Management I – Heterogeneous Distributed Inf. Systems (4 IV) (Integrierte Veranstaltung/ Integrated Course)

0434 L 440

Content:

The participants of this module will achieve deep conceptual, methodical, technical and practical knowledge in requirements analysis, design, architecture and development of heterogeneous and distributed information systems. This includes firstly classical knowledge about federated databases and mediator-based information systems (tight or loose coupling wrt. the dimensions of distribution, heterogeneity and autonomy). Secondly, different paradigms of heterogeneous information infrastructures and their management (e.g. P2P) and interoperability architectures ('middleware') will be investigated. Finally, modern model-based concepts for the development, integration and evolution of arbitrary information infrastructures, and –under this conceptual frame– model, metamodel, and metadata management as well as semantic concepts will be discussed and brought into practical experience by some larger project-like group work.

This „integrated course“ (Integrierte Veranstaltung, IV) consists of a lecture partition and a seminar-like partition, where all participants develop one of the key topics with own literature work and give short presentations. Additionally, there is a practical lab part of smaller and larger exercises, particularly one complex task, to be fulfilled in team work. Active contribution to all parts of the course is essential, as there will be a final report and a final presentation of all members of the course.

The course is principally designed to impart: technical skills 50%, method skills 30%, system skills 10%, social skills 10%

- Foundations/Terminology of HDIS (FDBS, FIS, MBIS)
- Dimensions of HDIS: Distribution, Heterogeneity, Autonomy
- Heterogeneous Data Models in HDIS: structured, semistructured, unstructured
- Distributed Data Organisation and Software Architectures of HDIS (FIS, P2P, CS, ...)
- Interoperability and Middleware Platforms for HDIS
- Persistency Services
- Metadata Standards and Management in HDIS
- Model-based Development of HDIS
- Applications from Industry and Public Services

Target group:

This course addresses **master students** with a focus on database systems and information management after the first (master) term in "Informatik", "Technische Informatik", "Wirtschaftsingenieurwesen". (If capacity is available, it will be open also for other faculties).

AIM-1 / HDIS is also open for the remaining diploma students in the mentioned areas.

Moreover, it is a compulsory course for the ERASMUS MUNDUS programme IT4BI.

Wahlpflichtmodul im Masterstudiengang Informatik/ Studienschwerpunkt System Engineering, Technische Informatik/ Studienschwerpunkte Software- Engineering und Informationssysteme und im Masterstudiengang Wirtschaftsingenieurwesen (Studiengang IuK.) AIM-1 / HDIS is also open for the remaining diploma students in the mentioned areas.

Prerequisite:

The basic modules in the Bachelor Curriculum in "Computer Science" (MPGI 1-5 at TU Berlin or equivalent); particularly an equivalent of MPGI5 ("Datenbanksysteme"/Database Systems) and MPGI3 ("Software Engineering") is required; INFMOD (Advanced Information Modelling) or equivalent strongly recommended. The AIM-1 / HDIS course will be given in English language, thus fluency in English is required!

Registration:

Students are required to register via the DIMA course registration tool before the start of the first lecture (<http://www.dima.tu-berlin.de>). Within the first six weeks (30.11.2019) after commencement of the lecture, students will have to register for the course at **QISPOS (university examination protocol tool)** and **ISIS (course organization tool)** in addition to the registration at the DIMA course registration tool.

Contributions:

The grade will be given by fulfilling all required tasks during the course (PÄS): seminar work; active participation in home/lab exercises including final report and presentation. The parts of the course will be weighted as follows:

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| 1. Seminar Talk | 25% |
| 2. Written Seminar Report | 40% |
| 3. Active Lab Participation | 10% |
| 4. Project Work/Homework | 25% |

Short Comment:

The module can be completed within 1 semester.

The lab capacity limits this course to max. 30 participants.

This module was initiated in winter term 2008/09, since then subsequently each winter term, from 2013 in summer term instead of winter. This module has been newly designed for summer term 2011, but similar courses have been given under the name "Heterogene Verteilte Informationssysteme" in previous times until 2008 (diploma system).

Contact persons:

Dr. Ralf-Detlef Kutsche

Tue 10 – 12 in E-N 719 (starts Oct 29th 2019)

Tue 14 – 16 in E-N 719 (starts Oct 29th 2019)

4 SWS/6 ECTS

Tue 10 – 12 & 14 – 16 in BIB 014 (**only on Oct 22th 2019**)