Course Title: Health Information Systems I: Requirements and Designs
Coordinating Unit: Faculty of Digital Engineering – Digital Health and Personalized Medicine
Semester: 1 (2018/2019) **Credits: 3**
Lecturer: Haas (Dortmund)

Digitalization is changing health care provision enormously. This effects structure, process and outcome and will lead to a new and high quality collaboration between health professionals and health professionals and their patients. New ways of thinking and acting will take place. The effects of digitalization of health care are tremendous: Improved timeliness of medical interventions; improved quality of patient care and patient safety by reducing medical errors; easy, accurate, and quick decision oriented information access at a fingers tip to patients individual health information but also to collective patient information in form of case databases and registers; easy, accurate, and quick access to medical knowledge; contemporary information sharing with all parties involved in care of a patient. Although computer based clinical decision making and generation of new medical knowledge i.e. through big date will open new dimensions to medicine.
Though what is the underlying basis for all of this? Of course excellent, well designed and easy to use electronic health information systems. For these systems hold the source of all – the patient data.
Learning objectives / Outcomes
Understand:

- Principles of care processes and resulting domain specific entities and associations in form of a domain ontology
- Requirements for health information systems from the viewpoint of different stakeholders
- Basic principles of health information systems
- The role of semantic in systems and terminology servers
- Importance of and concepts for customizable systems, customizing of local software installations
- Modules of comprehensive health information systems for health care institutions
- Definitions and manifestations of electronic patient record systems, paradigms of those systems
- Design principles of electronic medical record (EMR) and electronic health record (EHR) systems
- Significance, aspects, and implementation of interoperability
- Security aspects and mechanism for privacy and legal conformance
- Innovative approaches: context sensitive knowledge support, integration of apps, telemonitoring

Apply

knowledge of principles of health information systems …

- in project planning for specific implementations
- in specifications for software companies or call for tender
- in the analysis, design and implementation of such solutions
- in evaluation of specific systems

Analyze

- Information structure and processes in specific care scenarios
- Principles of specific health information systems
- Requirements for primary, secondary and tertiary use in specific care scenarios regarding the needs of the concerned parties

Evaluate
Usability and adequacy of functionality of given health information systems

- Integrity and adequacy of information models of given medical applications
- User satisfaction

Create

- Information and data models for specific medical applications
- Semantic specification for specific medical applications
- Process models for specific care processes
- Prototype of a health information system for a specific medical real-world excerpt
- Specifications for systems

For a specific medical real-world excerpt in tiny group students will tramp through the whole software development process from analysis, specification, design and implementation to realize a small health information system.

Applicable Module: Mandatory Module 'Software Architecture in Digital Health'