CMD-EL2- Knowledge Engineering & Semantic Web

Person in charge and Representative	Auer
Contact person	BIOMEDAS Office
Semester	Any
Topic cluster	Computational method development
Duration/Credit	30h lectures, 2h per week
Time	The exact date incl. time will be announced separately
Place	Online. Dial-in data are sent separately
Prerequisite for the lecture/course	Basic knowledge of the Web
Aim of the lecture/course	Understanding of basic knowledge engineering principles, such as ontologies & knowledge graphs, reasoning, inference. Theoretical and practical understanding and experience of established W3C standards for data sharing (RDF, SPARQL, RDFa, Microdata) and established Semantic Web technologies. Ability to understand, interpret and design knowledge models and ontologies. This course will provide an introduction to fundamental knowledge engineering principles as well as practical knowledge and insights into the use and application of state-of-the-art Semantic Web technologies. Based on established W3C standards such as RDF/OWL, Semantic Web technologies, Linked Data or semantic markup (through RDFa and Microformats) enable the application of formal knowledge engineering principles and have emerged as defacto standards for (a) sharing data and (b) for annotating unstructured documents with entity-centric knowledge. The wider goal and purpose is to improve understanding and interpretation of Web documents and data, for instance, to facilitate Web search or data reuse. This course will introduce key concepts of Knowledge Engineering. Key areas include knowledge representation and reasoning, knowledge & information extraction and knowledge retrieval, for instance, through state of the art semantic search and entity-retrieval approaches. 1. Course Introduction & Overview 2. Semantic Web Principles - URIs and RDF 3. RDF & RDFS 4. SPARQL as a Query Language 5. Ontologies & Logic 6. Description Logics 7. OWL-Web Ontology Language 8. OWL & Rules, Ontology Engineering