



Structure of the Master DKE

The Master DKE is organized across five thematic areas. Students must acquire a minimum of credit points (CPs) in each of these areas (see Table 1 below). Depending on their preferences, they should acquire more CPs in selected areas up to a maximum number. In particular:

- 1.) Thematic area „Underpinnings“ – 30 CP: choose modules on basics of data mining, database processing, data/image/multimedia engineering
- 2.) Thematic area „Models“ – at least 12 and at most 24 CP: choose modules on knowledge representation, knowledge modeling and knowledge processing
- 3.) Thematic area „Methods I“ – at least 12 and at most 24 CP: choose modules on knowledge discovery, artificial intelligence, machine learning
- 4.) Thematic area „Methods II“ – at least 12 and at most 24 CP: choose modules on information processing and retrieval
- 5.) Thematic area „Applications“ – at least 12 and at most 24 CP: choose modules on applications of Data & Knowledge Engineering, including business applications, medical applications, engineering applications and core computer science applications (like security or image understanding)
- 6.) Each student must participate in at least one team project (6 CP) related to a topic on Models, Methods, Applications or a combination of the above.

A recommendation on the scheduling of the five thematic areas, and an example selection of courses for „Underpinnings“ is given in Table 1.

A larger list of modules is given in Table 2, together with a mapping of each listed module to one or more of the thematic areas; the letters „w“ and „s“ stand for „winter term“, resp. „summer term“. A module usually fits to more than one thematic areas; a capitalized letter („W“, resp. „S“) indicates the best fitting thematic area for a specific module.

Both tables are indicative, since new modules may be added to the curriculum. Especially the seminars offered change quite frequently in order to cover recent research trends. If you identify a module in our faculty that you consider proper for the DKE but is not in the list, please consult the DKE Studies Advisor *before* enrolling to it.

Please remark: Some modules might fit to Master DKE conceptually but are not appropriate for a master degree. The most obvious examples are modules of the early semesters of the Bachelor degrees. Please consult the DKE Studies Advisor *before* enrolling!

Table 1. Scheduling the Master DKE

Nr.		1. Term (CP)	2. Term (CP)	3. Term (CP)	4. Term (CP)	Σ
1.	Thematic Area „Underpinnings“ (30 CP)		30			30
1.1	Data Mining		5			
1.2	Machine Learning		5			
1.3	Intelligent Data Analysis		5			
1.4	Information Retrieval		5			
1.5	Data Bases II		5			
1.6	Fundamentals of Computer Vision		5			
1.7	Visualization		5			
1.8	Scientific seminars and associated projects		3-6			
	Advanced Thematic Areas (60 CP)		30	30		60
2.	Models (12-24 CP)					
3.	Methods I (12-24 CP)					
4.	Methods II (12-24 CP)					
5.	Applications (12-24 CP)					
6.	Master Thesis (30 CP)				30	30
	Σ CP	30	30	30	30	120



Table 2. Mapping of modules to the areas of the Master DKE

Modules	Fundamentals	Models	Methods I (Knowledge Discovery)	Methods II (Data Management)	Applications
Remarks: - Modules marked with colors are offered in English - S/W refers to summer or winter Term (recommended mapping is capitalized)					
Advanced Database Models (ADBM; Erweiterte Datenbankmodelle)	s	s		S	
Advanced Topics in Databases (AdvDB)		s		S	
Advanced Topics in Machine Learning (ATI ML)			S		
Algorithm Engineering		S			
Anfrageoptimierung				W	
Anfragesprachen für XML und Suchmaschinen				S	
Applied Discrete Modelling (ADM)	s	s			S
Bayessche Netze (BN)		w	W		
Beschreibungskomplexität		W			
Bioinformatik (BioInf)					S
Biometrics and Security (BioSec)					W
Business Intelligence (BI)	S			(s)	
Cloud Computing mit Azure - Software-Infrastrukturen (SoInfra)					S
Coding Theory and Cryptography (Codierungstheorie und Kryptographie)		s			S
Compilerbau (CB)					W
Customer Relationship Management/Recommender Systems (CRM/RecSys)	S			s	s
Data Mining	S				
Data Warehouse-Technologien				W	
Datenbankimplementierungstechniken	S				
Distributed Data Management	w			W	
Einführung in Managementinformationssysteme					W
Evolutionäre Algorithmen (EA)			W		
Embedded Networks (EN)					S
Formal Modelle für natürliche Sprachen		S			
Formalsprachliche Modelle biologischer Prozesse		W			
Flow Visualization					S
Fuzzy Systeme (FS)	w		W		
Grammatical Picture Generation (Picture Generation)		S			
Grundlagen der Computer Vision	W				
Idea Engineering (IE)				W	
Information Retrieval (IR)	W			W	
User Interface Engineering (UIE)					S
Intelligent Data Analysis (IDA; Intelligente Datenanalyse)	S				
Intelligente Techniken: Data Mining for Changing Environments (DMCE)			S		
Intelligente Techniken: Data Mining for Customer Relationship Management (DMCRM)				W	
Intelligente Techniken: Web and Text Mining (WTM)			W		
Machine Learning (ML)	W				
Multimedia and Security					S
Multimedia Retrieval (MR)				S	
Neuronale Netze (NN)		w	W		
Pattern recognition in Image Analysis					W
Petrinetze		W			
Prozessmanagement					W
Qualitätsmanagementsysteme					W
Produktionssimulation (ProdSim)					S
Softwarequalitätsmanagement (SQM)					S
Service Engineering (SOA)					S
Topics in Algorithmics		W			
Transaktionsverwaltung				W	
Visualisierung	W				
<i>Scientific Seminars (a selection of scientific seminars on DKE related topics is offered each by different faculty members; please check the LSF for details)</i>	X	X	X	X	X
<i>Team projects (a selection projects on is offered by different faculty members; check LSF for details or contact members directly if you interested in their research!)</i>	X	X	X	X	X

Table 3a. Modules added in October 2011

Modules Remarks: - Modules marked with colors are offered in English - S/W refers to summer or winter Term (recommended mapping is capitalized)	Fundamentals	Models	Methods I (Knowledge Discovery)	Methods II (Data Management)	Applications
Validation & Verification (V&V)		W			
Agent Oriented System Engineering (AOSE)					W
Geometric Data Structures (GDS)		W		w	
Continuous Simulation (Kont.Sim)		W	w		
Introduction to Simulation		W			
WTP		W			
WIP		W			
Multimedia Systems Project (MMTECH)					W
Scientific Seminar "Recent Topics in Business Informatics"					W
Scientific Seminar "Knowledge Management and Discovery" Master			W&S		
Scientific Seminar "Knowledge Management and Discovery" Bachelor	W&S				
Scientific Seminar "Grundlegende und Fortgeschrittene Simulationenmethoden"					
Scientific Seminar "Selected Chapters of IT Security"					W
Scientific Seminar "Information Retrieval" (DKE Group)			W&S		
Teamproject "IT Sicherheit"					W
Teamproject "Computer Forensics Contest"					S
Teamproject "Knowledge Management and Discovery"			W&S		

Please check also LSF (<https://lsf.ovgu.de/>) for updated information on courses offered.