Program of Studies:	**Master Program Bioinformatics**
Name of the module:	**Information Retrieval and Data Mining**
Abbreviation:	**I-M-4**
Subtitle:	Core Lecture
Modules:	Lecture: 4 h (weekly) Tutorial: 2 h (weekly)
Semester:	1st -3rd semester/at least every two years
Responsible lecturer:	Prof. Dr. Gerhard Weikum
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Language:	English
Level of the unit/ Mandatory or not:	Graduate course / mandatory elective
Total workload:	270 h = 90 h of classes and 180 h private study
Credits:	9
Entrance requirements:	Good knowledge of undergraduate mathematics (linear algebra, probability theory) and basic algorithms.
Aims/Competences to be developed:	The lecture teaches models and algorithms that form the basis for search engines and for data mining and data analysis tools.
Content:	Information Retrieval (IR) and Data Mining (DM) are methodologies for organizing, searching and analyzing digital contents from the web, social media and enterprises as well as multivariate datasets in these contexts. IR models and algorithms include text indexing, query processing, search result ranking, and information extraction for semantic search. DM models and algorithms include pattern mining, rule mining, classification and recommendation. Both fields build on mathematical foundations from the areas of linear algebra, graph theory, and probability and statistics.
Assessment/Exams:	- Regular attendance of classes and tutor groups - Presentation of solutions in tutor groups - Passing 2 of 3 written tests (after each third of the semester) - Passing the final exam (at the end of the semester)
Grade:	Will be determined by the performance in written tests, tutor groups, and the final exam. Details will be announced on the course web site.
Literature:	Will be announced on the course web site.