## Module title
Modern Database Concepts

<table>
<thead>
<tr>
<th>Module code</th>
<th>Level</th>
<th>Hours per week</th>
<th>ECTS credits</th>
<th>Duration</th>
</tr>
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<tbody>
<tr>
<td>MDK</td>
<td>Master (M.Sc.)</td>
<td>4</td>
<td>5</td>
<td>1 semester</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Module instructor</th>
<th>Lecture type</th>
<th>Prerequisite(s)</th>
<th>Grading</th>
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<tbody>
<tr>
<td>Prof. Dr. Scherzinger</td>
<td>Interactive seminar with integrated exercises</td>
<td>Databases, Solid programming skills, Operating systems</td>
<td>Final exam</td>
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### Objectives
- Students understand the importance of scalability in the processing of large amounts of data.
- Students will acquire knowledge about the strengths and limits of relational databases.
- Students make design decisions at NoSQL databases as well as their implications.
- Students will learn approaches to development of scalable web applications and to capable of implementing it.
- Students classify cloud-based services as Infrastructure-as-a-service, platform-as-a-Service and Software-as-a-Service.

### Content
- Infrastructure of cloud-based companies such as Google, Facebook or Amazon.
- The Map-Reduce approach.
- Platform-as-a-Service services the example of Google Apps Engine.
- Efficient processing of large amounts of data in data-Warehouse applications and for scientific purposes.
- A study of work in the students their own cloud implement based Web application.

### Textbook/teaching material
- Selection of scientific publications on Google File System, BigTable, Hadoop. Hadoop in Action by Chuck Lam, published by Manning Verlag., 2011
- Programming Google App Engine by Dan Sanderson, O'Reilly, of 2010.

Note: this is not the official course descriptor according to the “Studien- und Prüfungsordnung” (SPO)