

# Introduction

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# Lecture

- IN4714:
  - Part of the module **Geodatabases** (BV470015)
  - Duration: 2V SWS
  - Credits: 2 ECTS

# Schedule

- Web page of the lecture:  
<https://db.in.tum.de/teaching/ws1920/DBSandere/?lang=en>
- **For dates always check TUMOnline**
- 2 hours weekly
- Wednesdays, 4.45 – 6.15 p.m.
- Exam (closed book): Date not fixed yet
- BV470015: 60 minutes
- IN4714: 40 minutes

# Teaching

- Questions during class are always welcome
  - Reading material for preparation
  - Beforehand distributed / embedded exercises
- Interactive class !!

# Content Overview

- Introduction
- Database Design
  - E/R-Modeling
  - UML-Modeling
- Relational Data Model
- Relational Query Language SQL
- Data Integrity

# Content Overview (cont.)

- Physical Data Organization
    - B-Trees
    - Hashing
  - Query Execution
  - Transaction Management
  - (Main Memory Databases, NoSQL Databases, Data Warehouses, ...)
- Preparation for Geodatabases,  
Andreas Donaubaauer, starting December 2018

# Material used

Slides of Prof. Kemper:

[www-db.in.tum.de/teaching/bookDBMSeinf](http://www-db.in.tum.de/teaching/bookDBMSeinf)

and Prof. Neumann:

[www-db.in.tum.de/teaching/ws1415/grundlagen](http://www-db.in.tum.de/teaching/ws1415/grundlagen)

(both in German)

# Literature (in German)

Alfons Kemper und André Eickler  
Datenbanksysteme: Eine Einführung  
10. Auflage (2015)  
(older Editions are also ok)  
Oldenbourg Verlag, München  
(~ 50 Euros)

[www-db.in.tum.de/teaching/bookDBMSeinf](http://www-db.in.tum.de/teaching/bookDBMSeinf)

# Associated Workbook

Alfons Kemper und Martin Wimmer  
Übungsbuch Datenbanksysteme  
3. Auflage (2011)  
(older Editions are also ok)  
Oldenbourg Verlag, München  
(~ 35 Euros)

# Additional Material

[www-db.in.tum.de/teaching/bookDBMSeinf](http://www-db.in.tum.de/teaching/bookDBMSeinf)

- Slides
- Videos of lectures
- Data to build own databases
- Programming examples for
  - IBM DB2
  - Oracle
  - MS SQL Server

# Additional Material

[tools.db.in.tum.de](http://tools.db.in.tum.de)

- Many useful database tools

<http://hyper-db.com/interface.html>

- A SQL webinterface based on HyPer

# Literature (in English)

A. Silberschatz, H. F. Korth und S. Sudarshan  
Database System Concepts, 6th edition,  
McGraw-Hill, 2010.  
[codex.cs.yale.edu/avi/db-book/db6/slide-dir/](http://codex.cs.yale.edu/avi/db-book/db6/slide-dir/)

R. Elmasri, S.B. Navathe  
Fundamentals of Database Systems, 6th edition,  
Addison-Wesley, 2010. (also available in  
German)

R. Ramakrishnan, J. Gehrke  
Database Management Systems, 3th edition,  
2003.  
<http://pages.cs.wisc.edu/~dbbook/>

## Literature (cont.), MOOCS

J.D. Ullmann, J. Widom

A First Course in Database Systems, Prentice Hall, 3rd edition, 2007.

[infolab.stanford.edu/~ullman/fcdb.html](http://infolab.stanford.edu/~ullman/fcdb.html)

## MOOCS

- Self paced mini courses, Stanford  
[class.stanford.edu/courses/DB/2014/SelfPaced/about](http://class.stanford.edu/courses/DB/2014/SelfPaced/about)
- Datenmanagement mit SQL, HPI  
[open.hpi.de/courses/sql](http://open.hpi.de/courses/sql) (in German)

# MOOCS (cont.), Lectures online

- Informationssysteme/  
Einführung in Datenbanksysteme, Uni Saarland  
[infosys.uni-saarland.de/datenbankenlernen/](http://infosys.uni-saarland.de/datenbankenlernen/)  
(partly in German)
- Lecture online (german)  
ETHZ, D. Kossmann, spring 2014:  
<http://www.video.ethz.ch/lectures/d-infk.html>  
English slides