

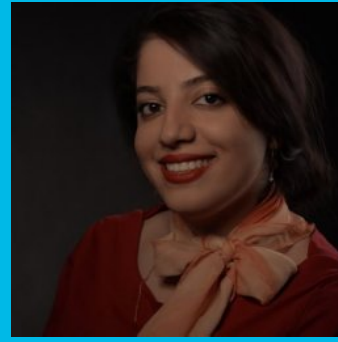
Welcome to TDDD37 / 732A57 Database Technology



**Olaf
Hartig**



**Sijin
Cheng**



**Shahrzad
Khayatbashi**



**Matheus
Laurent**

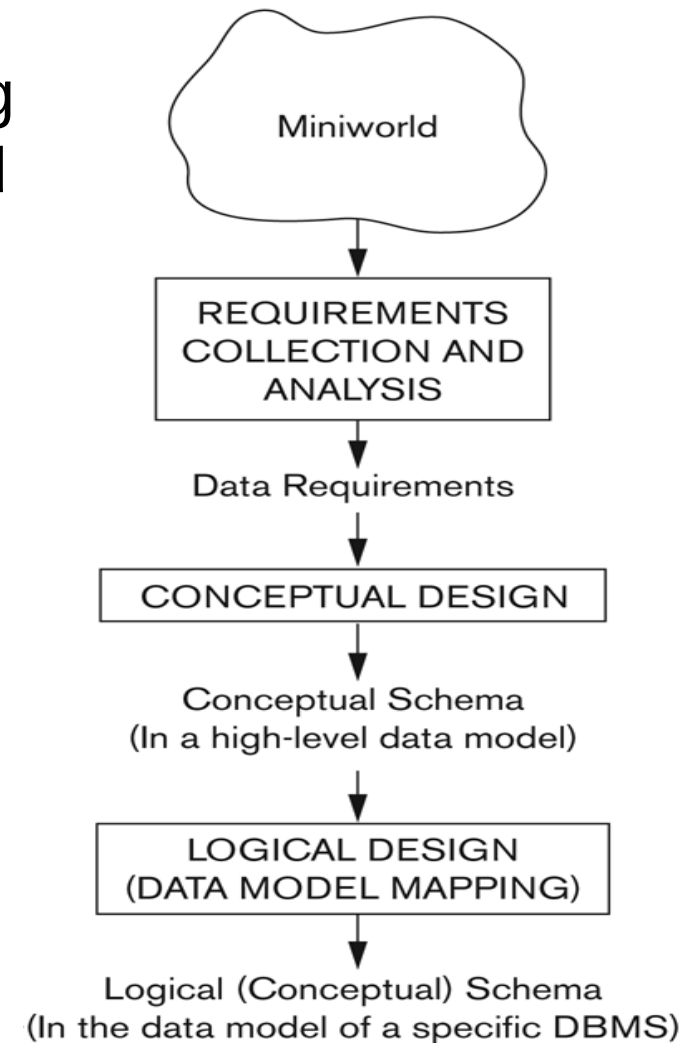
Topics and Intended Learning Outcomes

Course Topics

1. Fundamental concepts
2. Relational databases
3. SQL
4. EER modeling
5. Mapping of EER diagrams to relations
6. Functional dependencies and normalization
7. Stored procedures and triggers
8. Data structures for DBs
9. Introduction to Transaction Processing
10. Concurrency Control
11. Database Recovery
12. Query Processing

After the course you should be able to ...

- *Design relational databases* for different types of example domains by first creating a conceptual schema using the Enhanced Entity-Relationship (EER) model and then translating this conceptual schema into a corresponding logical schema captured in the relational data model.
- Analyze and improve the quality of given relational database schemas based on the formal measure of *normal forms*.



After the course you should be able to ...

- *Employ the SQL language* to query and to modify several example relational databases, as well as to create such a database with a given relational database schema.
- Compare the cost of finding and updating records in database storage files when using different approaches to organize and to index such files.
- *Apply basic techniques* that DBMSs can use to identify and to avoid problems that may occur when multiple users access a database concurrently.
- *Apply recovery algorithms* that DBMSs use to guarantee persistence of data even in the case of system failures.

Examination

Final Exam

- During the exam period after the course
- Dates: see pointer at the course Website
- Form of this examination still to be decided



Image source: [https://commons.wikimedia.org/wiki/File:ATC_Admission_Exam_\(2\).JPG](https://commons.wikimedia.org/wiki/File:ATC_Admission_Exam_(2).JPG)

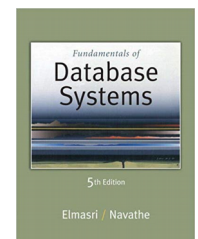
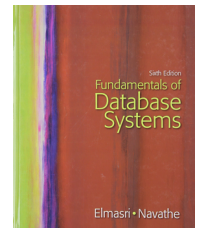
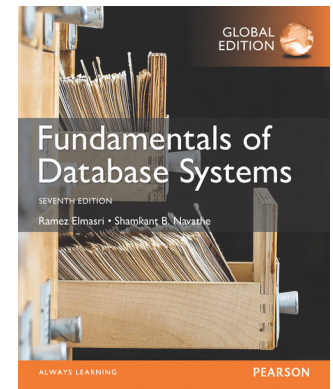
Four Assignments

1. SQL
 2. Database design and EER modeling
 3. Functional dependencies and normalization
 4. BrianAir project, *4a*: initial design, *4b*: improved design
4c: implementation, *4d*: urkund analysis
- Deadlines on the course Website
 - *hard deadlines* for assignments 4a and 4b (before assignment 3!)
 - To be solved in pairs
 - register with a lab partner in Webreg before the end of this week
 - Use MySQL server for assignments 1 and 4c
 - need access to MySQL server provided by LiU IT
 - instructions on the course Website

Organization of the Course

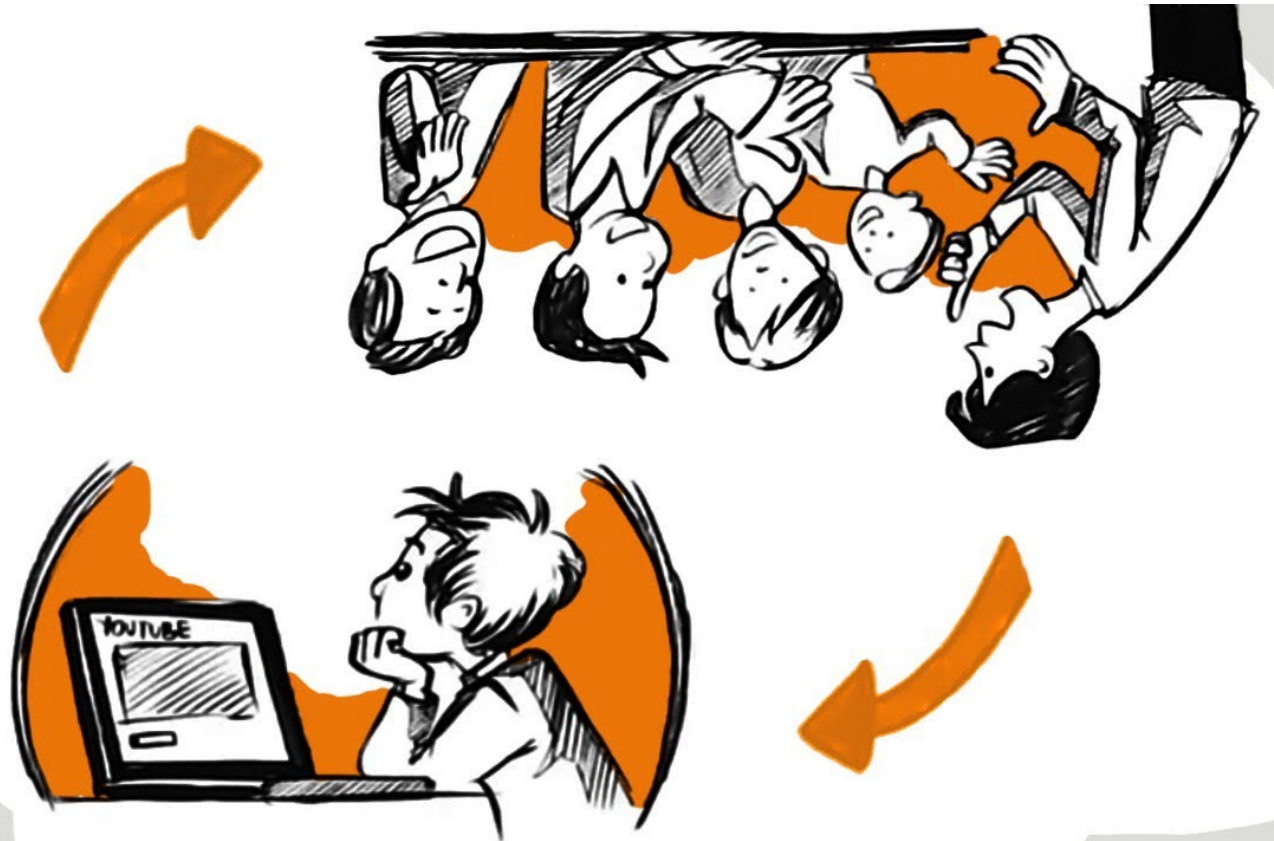
Structure of the Course

- Schedule on the course Website
- 12 lecture sessions
 - Some traditional, some in flipped-classroom style
 - Text book: Elmasri and Navathe. *Fundamentals of Database Systems*, Addison Wesley, 7th edition
- 9 lab sessions
 - First two: focus on assignment #1
 - Third one: focus on assignment #2
 - Remaining six: focus on assignment #4c (only three of these six lab sessions will be supervised)
- 1 teaching session
 - Discussion of #4a hand-ins (mandatory!)



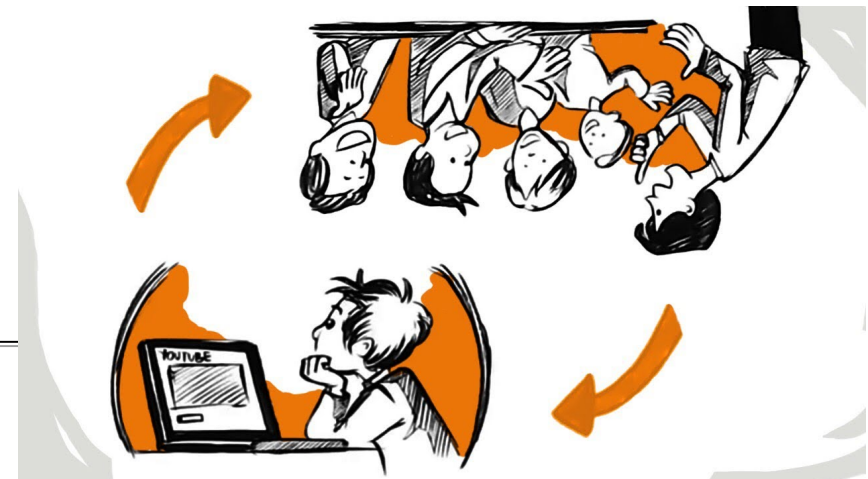
Flipped Classroom-like Model

- Idea:
 - you watch a video lecture *before* the lecture session
 - we use the lecture session to do some quizzes, go through some additional examples, and discuss questions and things that were unclear to you in these video lectures



Flipped Classroom-like Model

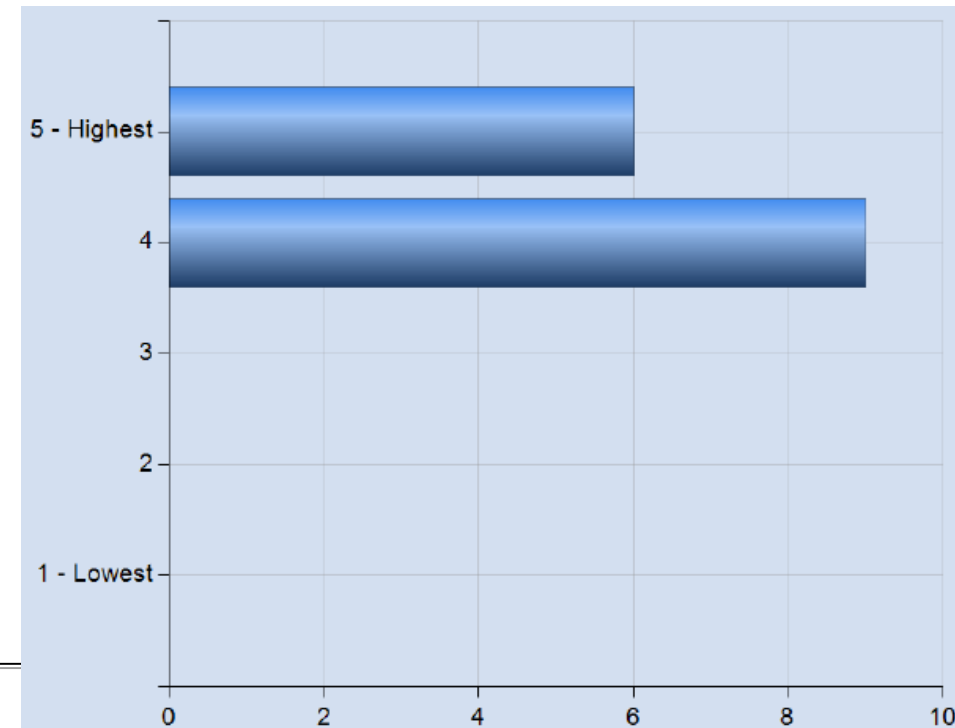
- Idea:
 - you watch a video lecture *before* the lecture session
 - we use the lecture session to do some quizzes, go through some additional examples, and discuss questions and things that were unclear to you in these video lectures
- In contrast to trying to replicate traditional lectures
 - more flexibility in terms of when you watch the videos (plus, you can pause, repeat, fast-forward, etc.)
 - role of the lecture sessions: give you ample opportunity to ask questions and to reinforce your learning of the concepts



Earlier Versions of the Course

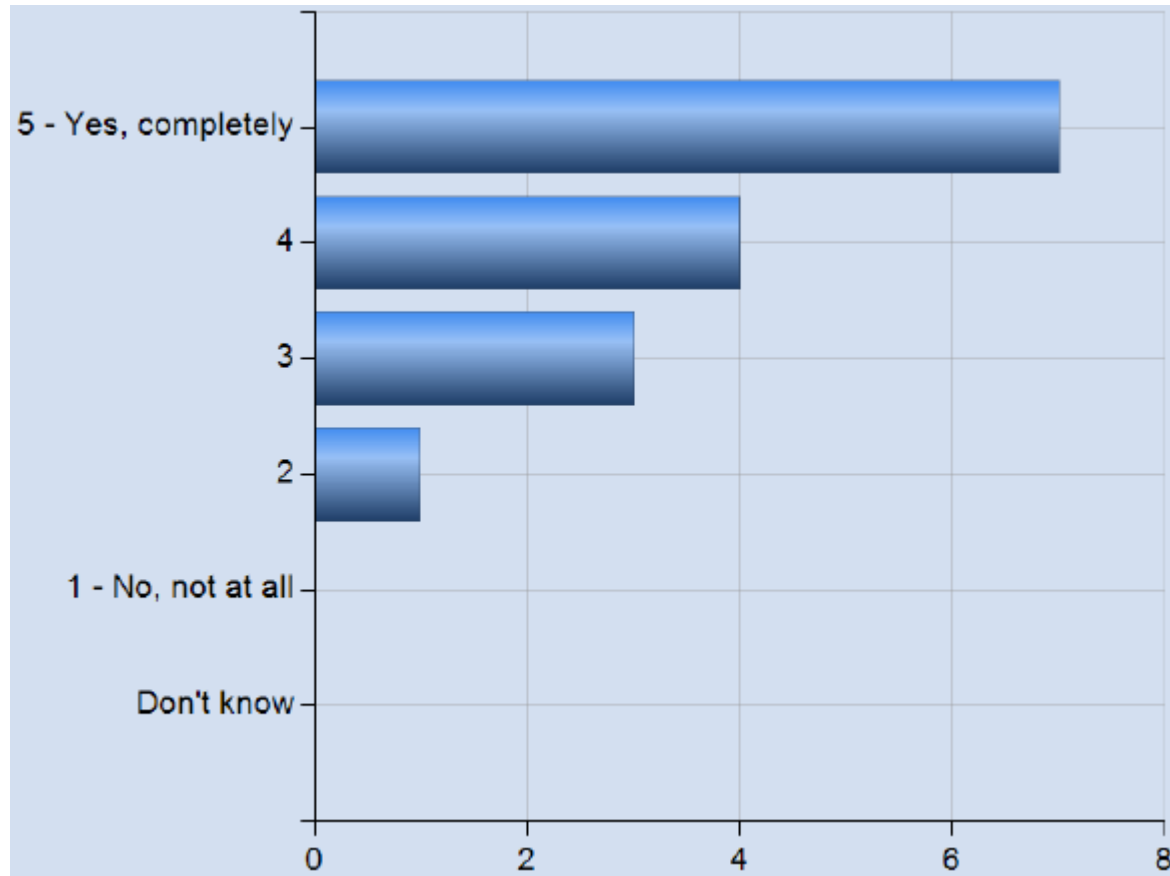
EvalLiUate Evaluations 2019

	732A57	TDDD37
Overall number of students	16	134
Students who answered	1 (6.3%)	15 (11.2%)
Overall evaluation	5.0	4.4 (± 0.51)



EvalLiUate Evaluations 2019 (cont'd)

Question: The educational methods used in the course supported my learning.



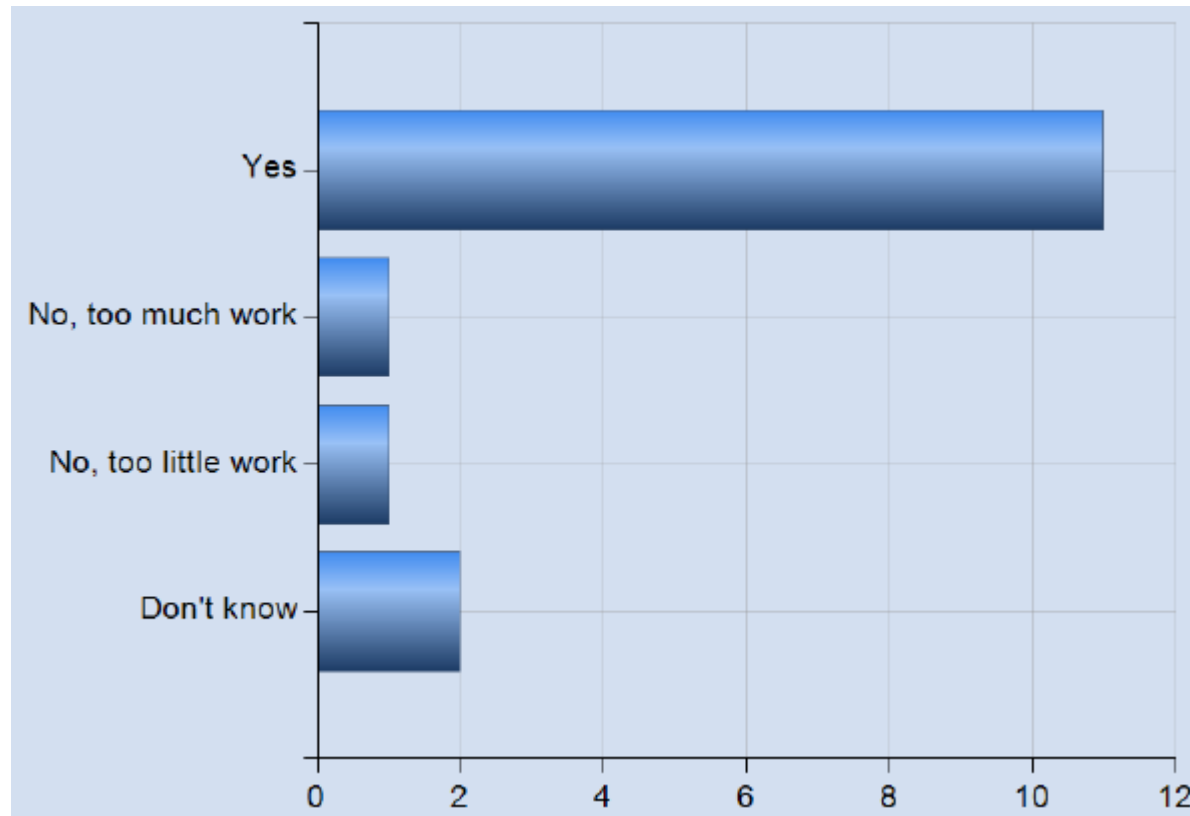
Related quotes from the free-text fields:

- *“Lab session really helps me a lot!”*
- *“The project and labs were very fun and I learned a lot.”*
- *“The quizzes during the lectures forced me to pay attention, which was nice.”*
- *“Can provide more problems to solve”*

Let's try the flipped-classroom model for some lectures this year!

EvalLiUate Evaluations 2019 (cont'd)

Question: The time I worked actively on the course (both timetabled hours and independent study) corresponded to the credit value of the course.



More Quotes

- General:
 - *“I thought the content of the course was very easy since a lot was repetition for a U-student. This could be changed.”*
- Regarding assignments and lab sessions:
 - *“Lab session really helps me a lot!”*
 - *“The project and labs were very fun and I learned a lot.”*
 - *“I want better chairs in the computer rooms.”*
 - *“I would like the requirements for the lab-assistants to be stricter. As it were, the one I had was both pretty bad at communicating, (I.E. difficult to understand and not very verbose) and bad at providing proper feedback.”*

Please bear with us!

- Not everything is guaranteed to run smoothly
- We are trying our best



www.liu.se