

# **Advanced Databases**

**CIS 4930 / CIS 6930**

**Markus Schneider**

Department of Computer and Information Science and Engineering  
CSE Building, Room E450  
University of Florida

# Preliminaries

- ❑ CIS4301 course web page  
[http://www.cise.ufl.edu/~mschneid/Teaching/CIS4930+CIS6930\\_Fall2016/CIS4930+CIS6930\\_Fall2016.html](http://www.cise.ufl.edu/~mschneid/Teaching/CIS4930+CIS6930_Fall2016/CIS4930+CIS6930_Fall2016.html)
- ❑ Syllabus available on CIS 4930 / CIS 6930 course web page
- ❑ My messages to the class are communicated by a class mailing list.
- ❑ Your questions ...

# Course Contents and Objectives

- ❑ Exploration of a selected collection of advanced database systems such as Cassandra, Couchbase, CouchDB, MongoDB, Neo4j, ObjectStore, PostGIS, SciDB, SparkleDB, Tamino
- ❑ All systems are non-relational except one system
- ❑ Knowledge acquisition about their
  - underlying data models
  - query languages
  - concepts and principles
  - techniques
  - functionalities
  - architectures
  - special features
- ❑ Comparison to established relational database systems

# Teaching Objectives (I)

## ❑ Teamwork

- Students learn to work in and be responsible for a group since group work will be the basis of all deliverables.
- This will increase their social competence as well as their communication and discussion skills.

## ❑ Installation and demonstration of an advanced database system

- An advanced database system from a pre-defined list is assigned to each group. Group priorities will be taken into account.
- Each group has to install the assigned advanced database system on a laptop or a PC. Note that laptops or PCs cannot be provided by the university or the CISE department for this task so that laptops or PCs have to be taken from group members.
- Students learn how to install an advanced database system on a computer, cope with installation problems, and also provide installation requirements such as particular operating systems.
- Each group will provide an in-class demonstration of their system.

## Teaching Objectives (II)

### ❑ “Students teach students”

- Only at the beginning the instructor will hold lectures. Afterwards, the student groups will take over.
- Each group will learn how to present their assigned system to all the other students in class by means of a PowerPoint presentation. In this manner, students will teach students as well as practice and improve their presentation and communication skills.

### ❑ Performing a literature study

- A topic or system requires to become aware of the state of the art.
- Students learn how to perform a literature study and process the found references and papers.
- The literature of interest can relate directly to the topic or system itself but also be centered around the topic or system. For example, if a system rests on a particular data model, scientific literature about this data model would be very helpful.
- References will be kept in BibTeX format.

## Teaching Objectives (III)

- ❑ Design and implementation of an application that showcases the special features of the assigned system
  - Each group will develop and implement a meaningful web-based application that demonstrates the particular features of the assigned advanced database system.
  - Students learn to perform software development and implementation on top of a new database software.
  - Each group will decide about the deployed programming languages and software packages.
  
- ❑ Writing a LaTeX document about the assigned system
  - At the end of the semester, each group will provide a well written and well formatted document that describes the main features of the assigned advanced database system as well as the designed and implemented application.
  - LaTeX is the only word processing tool that is allowed for writing this document. A LaTeX template will be provided.

# Group Deliverables and Grading (I)

- ❑ No exams, *no* homework assignments
  
- ❑ Six deliverables
  1. Literature study about the group-assigned ADBS described in a text document written in LaTeX and with references in BibTeX format and papers in PDF format (5 %)
  2. ADBS installation and demonstration (10 %)
  3. PowerPoint presentation about the group-assigned ADBS in front of the class (25 %)
  4. Application design showcasing the outstanding features of the group-assigned ADBS and described in a text document written in LaTeX with references in BibTeX format (15 %)
  5. Application implementation and demonstration (25 %)
  6. Detailed overview text document about the group-assigned ADBS written in LaTeX with references in BibTeX format (20 %)

## Group Deliverables and Grading (II)

- ❑ *Student's performance p*

$$p = 5 \cdot \frac{ls}{100} + 10 \cdot \frac{id}{100} + 25 \cdot \frac{pp}{100} + 15 \cdot \frac{ad}{100} + 25 \cdot \frac{ai}{100} + 20 \cdot \frac{td}{100}$$

- ❑ Letter grades

Student's Performance $p$	Letter Grade
>94-100	A
>88-94	A-
>82-88	B+
>76-82	B
>70-76	B-
>64-70	C+
>58-64	C
>52-58	C-
>46-52	D+
>40-46	D
>34-40	D-
0-34	E