

Course Introduction

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Department of Computer Sciences
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Agenda

Today's Agenda

1. Introduction
2. Course Organization
3. Outlook
4. Discussion

Who Am I? Who Are We?

Who am I? Daniel Kocher, Research Assistant, Database Research group



Database Research group (summer 2019).

Contact (in this order):

1. **Lecture:** Mondays, 08:00 - 10:00 am CET.
2. **Slack:** <https://dbteaching.slack.com/> (**create** an account with the stud email).
3. **Email:** dkocher@cs.sbg.ac.at (as a last resort).

Please **interrupt me** if

- you have **troubles understanding** what I am talking about,
- you have a **question** related to the current topic, or
- there is an **error on my slides**¹ (1 bonus point/error; max. 5 bonus points/student).

¹No punishment if it is not an error. Typos do not count (unless relevant), but please notify me anyways.

Why You Should Take This Course

The amount of **information** is growing rapidly and **needs to be managed**.

Many systems for different scenarios have been developed.

You must be able to **choose the proper system** for your use case.

- **Overview** on the landscape of **database management** and **processing systems**.
- Learn about the **challenges** these systems have to deal with.
- **Choose a system** for a given problem.
- **Hands-on experience** with selected systems.
- Be aware of **emerging trends** in database management systems.

Data Management:

- Declarative query processing.
- General-purpose and specialized database management systems.
- Relational and non-relational logical models.
- Workloads and challenges.
- Transaction models (ACID vs. BASE).
- CAP Theorem.
- SQL, NoSQL, and NewSQL systems.
- Database as a service (DaaS).

Data Processing:²

- Batch processing (e.g., Apache Spark).
- Stream processing (e.g., Apache Flink).
- Industrial-scale machine learning (e.g., Apache SystemDS).

Emerging Trends:²

- Self-designed and learned data intensive systems.
- Blockchains and database management systems.
- Data management on modern hardware.

²Topics not fixed yet.

We will cover some basics of database management systems, but **not the internals in detail**. For internals, we refer to other courses at the Department of Computer Sciences.

Undergraduate Courses:

- Databases 1 (VO+PS; summer term)
- Databases 2 (VO+PS; winter term)
- Database Tuning (VO+PS; summer term)

Graduate Courses:

- Advanced Databases (VO+PS; winter term)
- Non-Standard Database Systems (VO+PS; summer term)
- Similarity Search in Large Databases (VO+PS; winter term)

VU Grundlagen Informatik und Systeme (512.023)

⇒ **Basic principles** of computer science and systems.

UE Einführung in Programmieren mit Python (512.024)

⇒ **Basic programming skills** (e.g., in Python3).

Organization

Website: <https://dbresearch.uni-salzburg.at/teaching/2021ss/dim/>

- Announcements (important announcements also via email).
- Grading scheme.
- Schedule + slides.
- Assignments (incl. late submission policy).
- Midterms (incl. topics).

Slack:

1. **Create an account**³ for our DBTeaching workspace (using your stud email).
2. **Log into** the workspace.
3. Browse the channels and **search** for **channel** “dim-uv-2021ss”.
4. **Join channel** “dim-uv-2021ss”.
5. **Say “Hi”** to the others in the channel :)

³Top right corner in most browsers.

General Information:

- The **lecture for all enrolled students** is held on **mondays, 08:00 - 10:00 am CET**.
- **Theoretical background** for the **assignments**.
- Covers the topics **relevant for the exams**.
- Attending the lecture is mandatory (*“prüfungsimmanent”*).

Grading Scheme

Assignments		Exams		Total
Assignment 1	18%			
Assignment 2	18%	Midterm exam	23%	
Assignment 3	18%	Final exam	23%	
	54%		46%	100%

General Information:

- **Groups of three** students (enrollment via Blackboard⁴).
- **Practical assignments** related to the topics covered in the lecture.
- Submission via **Blackboard** (4 weeks per assignment; max. 5 weeks).
- **3 assignments, each of which contributes 18%** to your grade.
- Assignments are **graded per group**.
- Please notify me if a student does not contribute to the assignments.

⁴If there is any problem in the Blackboard course, please notify me as soon as possible.

Late Submission Policy: You can submit late (up to one week) but **you will lose 5%** of the assignment's total points for **every 24h delay**. Delay is computed with respect to the initial deadline and is **rounded up** to the next multiple of 24.

Example: You submit 25h late. Then, it is counted as 48h and results in -10%.

After-Assignment Meetings: Short meetings to **discuss your submission** and the **grading. One meeting per assignment and group** (about 12min.; max. 15min.). Students will need to **answer questions** directly related to the assignment. This may also affect the final grading (positively or negatively).

Assignment 0

Task:

1. Find yourself a team of three students.
2. Enroll your team in the Blackboard course.

Deadline: March 15, 2021, 11:55 pm (aka 23:55) CET

Students without a team are randomly assigned to groups by the instructor.

General Information:

- Exams will be held via **Blackboard**.
- **2 exams** (midterm and final), **each of which** contributes **23%** to your grade.
- An exam will last **at most 1.5h**.

~~Students are scheduled according to the PlusOnline groups (i.e., a student enrolled in Group 2 cannot take the exam of Group 1).~~

The **exam date** and **time** is the **same for all students** (disregarding PlusOnline groups).

Schedule – Assignments

Assignment 1 **Timeframe:** March 22, 2021 – April 19, 2021 (late: April 26, 2021)

Deadline: 11:55 pm (aka 23:55) CET

Meeting: Week of April 26, 2021

Assignment 2 **Timeframe:** April 19, 2021 – May 17, 2021 (late: May 24, 2021)

Deadline: 11:55 pm (aka 23:55) CET

Meeting: Week of May 31, 2021

Assignment 3 **Timeframe:** May 17, 2021 – June 14, 2021 (late: June 21, 2021)

Deadline: 11:55 pm (aka 23:55) CET

Meeting: Week of June 21, 2021

Exact time depends on your PlusOnline group.

Midterm Exam **Date:** May 10, 2021

Topics: Everything that is covered until May 3, 2021 (excl.)

Q&A Session: May 3, 2021

Final Exam **Date:** June 28, 2021

Topics: Everything that is covered until June 21, 2021 (excl.)

Q&A Session: June 21, 2021

Q&A