



Important Information at a Glance

Attending the Inverted Classroom Lectures

- **Register here until November 10th to get Teams Access!**
- **Passive** Component:
Watch the current lecture video and/or read the script to prepare for the active discussions. If you have motivation issues, setting a fixed weekly time slot for this might help!
- **Active** Discussions: Thursday 10:15-12:00
Discuss the current learning unit in a Teams session. Ask questions beforehand or during the live session.
- Introductory Meeting: Thursday, **3.11.2022**, 10:15 sharp
The first meeting is dedicated to an introduction and you can ask all questions that are not answered by this document there.
- First Discussion: Thursday, **10.11.2022**, 10:15 sharp
Discussion of Lecture 01, watch the video beforehand.

Tutorials

- **Active** discussion of lecture-related problems in groups.
- your individual choice: face-to-face tutorials or online
- **Register your preferred tutorial mode in Teams until November 10th.**
- **Feel free to use the organisation channel to find a group or message Pascal Peter to join the group roulette (random team assignment)!**

Exams

- A **sample exam** in Teams shows you what kind of assignments to expect.
- closed book: no notes or lecture materials allowed
- First exam: February 13, 2023, 14–16, Building E2.2, Günter Hotz Lecture Theatre
- Second exam: March 30, 2023, 14–16, Building E2.2, Günter Hotz Lecture Theatre
- You can attend both exams, the better mark counts.
- **Exams require LSF registration!** (Starts a few weeks into the semester.)

In the rest of the document you find more detailed organisational information.



A Word of Welcome

Welcome to my lecture *Image Acquisition Methods* (IAM). This comprehensive document is intended to provide you with the organisational information that you need in this semester. Together with the introduction meeting, it should also help you decide if you want to take this lecture.

IAM covers the fundamentals of image acquisition and highlights ties to image processing. In this lecture, you will learn basic principles from physics and mathematics that are required to understand different ways to generate images from real-world objects. In addition to well-known techniques such as photography and various medical imaging methods (e.g. computed tomography), you will also encounter more exotic approaches such as holography. Primarily, the lecture is intended for students interested in image processing: Here you learn the origins of images you want to process and the meaning behind abstract pixel data. However, it might also help you to understand image acquisition techniques that you encounter in daily life. For a more detailed introduction to the contents, I invite you to our first meeting.



During the last semesters, I received both the wish for in person and online teaching from many students. Therefore, it will be your choice how you participate. We offer a virtual inverted class room and optional face-to-face interactions are available where they matter most: During group work with your fellow students, assisted by our teaching staff. Please make use of the opportunities to discuss both with other students and with us! Especially the active part of the inverted class room requires your participation to be successful.

The lecture concept allows you to study at your own pace: Only the tutorials are time-gated, while most of the lecture content will be available at day one. If you have time at your hands, you can already brows through future lectures – or you simply prepare for the discussions by focusing on one lecture per week.

I hope you will enjoy this lecture and look forward to discussing with you. Do not hesitate to ask questions or submit feedback.

– Pascal Peter

Teaching Goals

After attending the lecture you should ...

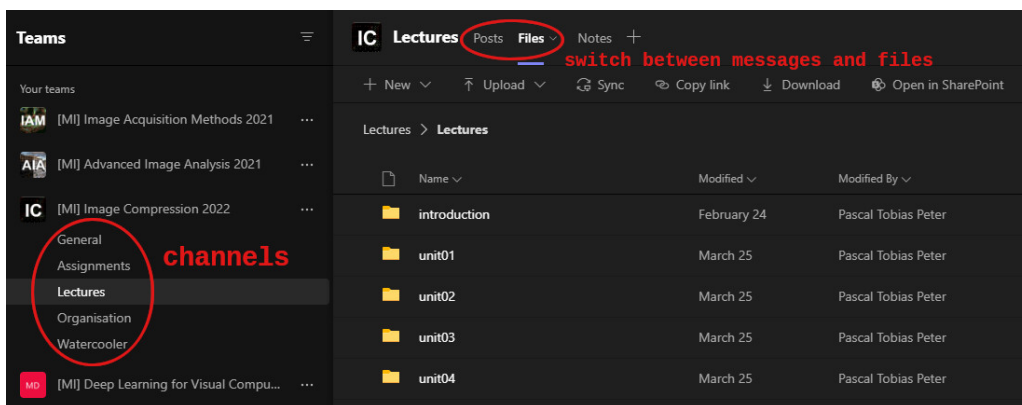
- ... have an overview of a wide range of image acquisition methods.
- ... have an understanding of basic underlying physical and mathematical principles.
- ... understand how different acquisition methods are connected.
- ... know which kinds of artefacts to expect for different methods.
- ... be aware of connections to sub fields of image processing.



Inverted Classroom in Teams

Step 1: Prepare by Watching/Reading Lecture Materials

- Every week is dedicated to a *lecture* focusing on a specific topic.
- **You should prepare this content before the active discussion sessions.**
- Find the lecture content by navigating to the *file* tab of the *lecture channel*.



- Most of the content is available from day one. Go ahead and watch content at a faster pace, if you like. However, meetings still focus on one lecture each week.
- The native video player in Teams is sluggish or your internet connection is slow? Download the video files and watch them with your favourite player!
- Note: Much of the video content is from previous semesters, only new parts are edited in (sorry, production costs a **lot** of time.) Thus, slide numbers are not always identical with the pdf scripts!

Step 2: Join the Weekly Meeting in the Lecture Channel

- Meetings in the *lecture channel* are dedicated to your questions and ideas.
- The meetings take place every Thursday at 10 c.t., which means 10:15 sharp.
- Submit questions before the meeting (direct message, mail) or during the meeting.
- Use video/voice chat if possible. This makes the meetings much more lively.
- Ask anything (at least broadly course-related) you like, no matter how basic or broad.
- Feel free to ask questions about previous learning units, too.
- Since active attendance is the goal, the meetings are **not** recorded.



Tutorial Details

Classroom Work

- All tutorial content is **relevant for the exams** unless explicitly excluded.
- The weekly assignments are intended for group work.
- Please let us know **in the first week** if you want to participate in face-to-face tutorials or online. More information about group registration can be found in the *organisation channel* of Teams.
- **First tutorial:** Tuesday, November 15, 2022
- Solutions will be available after the tutorials.

Groups

- Organise in groups for the tutorials (2-3 students recommended per group).
- You can use the organisation channel to look for groups.
- Alternatively, join the group roulette by messaging Pascal Peter.
- Once your group has formed, send a message to Pascal Peter to receive your own private channel. (Staff can still read it, though.)



Exam Rules

Detailed Rules for the written Exams. These might be augmented with additional rules such as e.g. covid safety measures towards the end of the exam period.

Please also consider the self-test problems in the assignment channel to get a better idea of the exam contents.

- **Written exams will be conducted in person. Virtual oral exams are only possible if the student cannot take part due to reasons beyond their control (e.g. sickness) and if university regulations still permit online exams at the end of the semester.**
- All content from the lectures and tutorials is relevant unless explicitly stated otherwise.
- The scripts, videos, and tutorial materials contain all content you need to solve the exam. No external sources (e.g. books) are required.
- The time limit for the exam is 90 minutes.
- **No** pocket calculators or other electronic devices are allowed in the exam.
- The exam is closed book, i.e. you cannot bring any lecture materials. Cheat sheets are also **not** allowed.
- The exam is provided in English and German. You can also answer in both languages (but please don't mix and match arbitrarily).
- Dictionaries are allowed in case you do not trust your English or German.
- **HISPOS/LSF registration is mandatory.** If you cannot register (e.g. Erasmus students) please contact Pascal Peter.
- If you take the exam, you have to stay till the end, you cannot leave early.
- Only write on the paper that is provided by us. If you run out of space or need a scrap sheet, we will provide you additional blank sheets.
- You may not take the exam or any written solutions with you. Also your scrap sheets have to be handed in.