Semester plan

Version: February 17, 2025

ISP / ADLS
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The semester plan may be updated over the time. You will be informed of any relevant changes to the plan.

The module is organized in three main parts: **Time signals**, **Images**, and **Applications**. Each of the two first parts is completed with a graded written examination. In the last part, students have time to work on a project in groups.

CW	SW	Date	What	Topics
8	1	17.02.25	Practice	**Introduction:** Motivation, general information and setup
		21.02.25	Lecture	**Time signal processing:** Continuous and discrete signals, sampling
9	2	24.02.25	Practice	**Time signal processing:** Audio signals, superposition, sampling, autocorrelation
		28.02.25	Lecture	**Fourier:** Types of Fourier transforms, time-frequency duality, spectra
10	3	03.03.25	Practice	**Fourier:** FT for own signal, spectra and visualizations
		07.03.25	Lecture	**Filtering:** Convolution, signal characteristics and noise, purpose
11	4	10.03.25	Practice	**Filtering:** Time-domain behavior of different filters
		14.03.25	Lecture	**Filtering:** Common filters for (discrete) time signals
12	5	17.03.25	Practice	**Filtering:** Frequency domain behavior of filters
		21.03.25	Lecture	**Images:** Sampling, formats, spatial and color space transformations
13	6	24.03.25	Practice	**Examination 1: Signal processing** / Basics about image processing
		28.03.25	Lecture	**Fourier in 2D:** Amplitude (and phase) images, spectrogram
14	7	31.03.25	Practice	**Fourier in 2D:** Spectral images, DIY kernels / **Group projects: Topic fair**
		04.04.25	Lecture	**Image processing:** Gradients, noise removal, detection
15	8	07.04.25	Practice	**Image processing:** Noise removal, detection
		11.04.25	Lecture	**Image processing:** Masks, morphological operations, contours, segmentation
16	9	14.04.25	Practice	**Image processing:** Masks, ... / **Group projects: Problem statement**
		18.04.25		Karfreitag / Good Friday
17	10	21.04.25		Easter Monday
		25.04.25	Lecture	**Image processing:** Feature extraction
18	11	28.04.25		Industry visits / Brücke
		02.05.25		
19	12	05.05.25	Practice	**Examination 2: Image processing**
		09.05.25	Lecture	**Applications:** Matching / registration, stereo vision, demos
20	13	12.05.25	Practice	**Group projects: Q&A**
		16.05.25	Lecture	**Applications:** Compression (JPEG / MPEG), demos
21	14	19.05.25	Practice	**Applications:** From Bar- to QR-Codes
		23.05.25	Lecture	**Summary / Buffer**
22	15	26.05.25	Practice	**Group projects: Q&A**
		30.05.25		Auffahrt / Brücke
23	16	02.06.25		Semester break
		06.06.25		**Group projects: Submission of notebooks – Fr 06.06.25, 23:59**
24	17	09.06.25		Semester break
		13.06.25		**Group projects: Submission peer feedback – Fr 13.06.25, 23:59**