

EE-569

**Image and video coding**

Cursus	Sem.	Type
Electrical and Electronical Engineering	MA1, MA3	Opt.
Electrical and electronic engineering minor	H	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Oral
Workload	120h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Courses	3 weekly
Project	1 weekly
<b>Number of positions</b>	

**Remark**

pas donné en 2024-25

**Summary**

This course addresses coding of visual information. The primary focus will be on image and moving picture compression. Concrete examples of image and video coding algorithms such as those standardized under JPEG and MPEG are explained and compared.

**Content**

The course covers the following topics:

- Fundamentals tools in image and video processing.
- Overview of approaches to visual information coding and compression.
- Image coding algorithms: JPEG, JPEG 2000, JPEG XR, JPEG XT, JPEG XL, JPEG XS, JPEG AI
- Video coding algorithms: H.261, MPEG, MPEG-2, MPEG-4, H.264/AVC, H.265/HEVC, H.266/VVC
- Immersive content representation and coding
- Performance assessment and quality metrics

**Keywords**

JPEG, MPEG, Subjective quality assessment, quality metrics, immersive representation

**Learning Prerequisites****Required courses**

- Basic knowledge of signal processing and calculus

**Recommended courses**

N/A

**Important concepts to start the course**

N/A

**Teaching methods**

Lectures  
Hands-on sessions  
Mini-projects

**Expected student activities**

Submit reports of hands-on sessions  
Presentation of the mini-project

### **Assessment methods**

- Final exam
- Assessment of submitted hands-on reports
- Assessment of mini-project presentation

### **Resources**

#### **Moodle Link**

- <https://go.epfl.ch/EE-569>