

EE-552

**Media security**

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Cursus	Sem.	Type
Electrical and Electronical Engineering	MA2, MA4	Opt.
UNIL - Sciences forensiques	E	Opt.

Language of teaching	English
Credits	6
Session	Summer
Semester	Spring
Exam	Written
Workload	180h
Weeks	14
<b>Hours</b>	<b>3 weekly</b>
Courses	2 weekly
Exercises	1 weekly
<b>Number of positions</b>	

**Summary**

This course provides attendees with theoretical and practical issues in media security. In addition to lectures by the professor, the course includes laboratory sessions, a mini-project, and a mid-term exam.

**Content****Media security problems:**

Rights protection, content integrity verification, conditional access, confidentiality, privacy, steganography and data hiding.

**Media access problems:**

Access control, conditional access, access over time, copyright.

**Media security tools and solutions:**

Robust watermarking, fragile watermarking, selective encryption, monitoring, robust hashing, content identification, visual password.

**Media security standards:**

Secure JPEG 2000 (JPSEC), security tools in the MPEG family of standards from MPEG-1 to MPEG-21.

**Applications:**

Surveillance with privacy, image and video right protection, security in digital cinema, etc.

**Keywords**

watermarking, robust hashing, privacy, conditional access, integrity verification, surveillance, visual password

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

Any course that covers basic concepts of data encryption or security

**Recommended courses**

Any course covering basics of image and video processing

**Important concepts to start the course**

Basic knowledge of data encryption and security  
Basic knowledge of image and video processing

**Learning Outcomes**

By the end of the course, the student must be able to:

- Reason the level of security in a multimedia systems
- Formulate the level of security in multimedia systems
- Explain concepts needed in multimedia systems
- Create secure multimedia systems

### Transversal skills

- Summarize an article or a technical report.
- Write a scientific or technical report.
- Make an oral presentation.

### Teaching methods

Lectures, mini-project, laboratory sessions, mid-term exam, final exam

### Expected student activities

Prepare and present a specific topic in media security as part of the mini-projet  
Perform laboratory sessions and write a report

### Assessment methods

Final exam will be in oral if less than 20 students.

Final exam will be written if more than 20 students.

Final mark will be a weighted sum of the marks of final, and intermedia exams, as well as mini-project and laboratory sessions.

### Supervision

Office hours	No
Assistants	Yes
Forum	Yes
Others	Students are encouraged to contact the professor at any time if they have any questions or need any clarification of any of the concepts presented during the course.

### Resources

#### Bibliography

Lecture notes, selected articles.

#### Notes/Handbook

Print-out of slides presented

#### Moodle Link

- <http://moodle.epfl.ch/course/view.php?id=235>