

**SIC4501 Image and sound acquisition and coding**

Period : S8 / P1

ECTS : 4

Language : English

**Organization :**

- Teaching Load / Total Load : 45/90
- Lectures/Exercices/Labs/Final Exam : 27/0/18/0

**Assessment**

Grading is based on graded labs

**Objectives**

Capacity to process image and sound signal for multimedia applications: including capture, pre-processing and coding.

**Keywords**

Signal processing, image processing, Fourier transformation, sampling, contrast enhancement, image deblurring, wavelet transform, mathematical morphology, speech, coding, compression.

**Prerequisites**

Experience in computer programming.

**Course outline**

- Applications of signal and image processing
- Digital signal and image processing: Fourier transform, sampling, quantification, analogue-to-digital conversion, linear filtering.
- Digital signal processors (DSP).
- Image pre-processing: colour demosaicing, illumination correction, contrast enhancement, deblurring, morphological filtering.
- Wavelet transform.
- Coding and compressing sound, speech and images..
- Theoretical background, normative aspects as well as software and hardware implementation will be presented.

**Learning materials and literature**

Interactive illustrations from the multimedia courseware: <http://cours.int-edu.eu/tim>.

Books:

- Digital Image Processing by Rafael C. Gonzalez, Richard E. Woods, 1992
- Digital image signal processing by F. M. Wahl, Artech House, 1987
- Image Analysis and Mathematical Morphology by Jean Serra, 1982
- Digital Image Processing by William K. Pratt, (1978).
- Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew, Prentice-Hall, 2004; <http://www.cs.sfu.ca/mmbook>.

**Person in charge**

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**Lecturers**

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