

5.0 credits	30.0 h + 30.0 h	1q
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Teacher(s) :	De Vleeschouwer Christophe (coordinator) ; Macq Benoît ; Jacques Laurent (compensates Macq Benoît) ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Main themes :	See contents
Aims :	<p>After an introduction to the fundamentals of digital image capture and representation, the course addresses the mainstream areas of image processing. Through lecture, projects and paper review, the student should get enough skills to solve non-trivial problems in a broad range of applicative fields like quality control, visual communication, video surveillance, human-computer interfaces, medical imagery, and so forth.</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Content :	<p>Digital image representation Human perception 2D Discrete Fourier Transform Linear and non-linear filtering Orthogonal transforms and sparse approximation Image and video compression Morphological image processing Feature detection (edges, corners, textures) Segmentation and shape analysis Multimodal images registration Detection and recognition of objects Object tracking in video sequences</p> <p>Lecture Paper reviews and discussion Learning by projects : a number of practical problems will be solved based on conventional image processing software platforms.</p>
Other infos :	<p>Pre-requisites : Signal processing, signals and systems, and stochastic processes</p> <p>Evaluation :                      . One final exam : to help you to grasp the fundamentals of today's image processing                      . One project : it consists in the implementation and the critical analysis of an algorithm proposed in the literature                      . Paper reviews : students are expected to read papers before some of the classes, submit a summary for each paper, and participate in the discussion during the class</p> <p>Support : Slides, reference papers, and software libraries (Matlab, Open CV)</p>
Cycle and year of study :	<p><a href="#">&gt; Master [120] in Physics</a>  <a href="#">&gt; Master [120] in Computer Science and Engineering</a>  <a href="#">&gt; Master [120] in Computer Science</a>  <a href="#">&gt; Master [120] in Mathematical Engineering</a>  <a href="#">&gt; Master [120] in Electrical Engineering</a>  <a href="#">&gt; Master [120] in Electro-mechanical Engineering</a>  <a href="#">&gt; Master [120] in Biomedical Engineering</a></p>
Faculty or entity in charge:	ELEC