

Programas Internacionales de Titulación Doble/Múltiple

Máster

INVESTIGACIÓN E INNOVACIÓN EN TIC

(in the field of IMAGE PROCESSING AND COMPUTER VISION)

UAM - BORDEAUX - PPCU

PRESENTATION

The **Universidad Autónoma de Madrid** (UAM), the **Université de Bordeaux** (UB) and the **Pazmany Peter Catholic University of Budapest** (PPCU) offer a two -year 120 ECTS syllabus in the Image Processing and Computer Vision (IPCV) domain.

Images and videos are present everywhere in the world today. They are more often used in a lot of fields such as medicine, surveillance, industrial control, remote sensing, e-commerce, automation. Having a strong background on how to process and analyze images and videos gives access to many job opportunities in various firms.

Nowadays, there are only very few training courses entirely dedicated to image processing and computer vision. Therefore the three cooperating universities have decided to pool their complementary expertise to offer an international Master-level syllabus in “Image Processing and Computer Vision” (IPCV) so as to give students theoretical and practical knowledge allowing them to adapt to any kind a job related to this topic

DEGREES

Students who successful complete the study program will obtain **three Master degrees**:

■ UAM:

- Investigación e Innovación en TIC (i2-ICT)

■ UB:

One of the following:

- Informatique, spécialité Image, Son, Vidéo (ISV)
- Mathématiques, spécialité Traitement des signaux et des images (TdSI)
- Electronique, automatique, productique, signal et image (EAPS), spécialité Traitement des signaux et des images (TdSI)

■ PPCU:

One of the following:

- Engineering Information Technology, specialization in IPCV

- Info -Bionics, specialization in IPCV

CURRICULUM AND STRUCTURE

IPCV students will all follow the same schedule. They will spend an entire semester in each university:

- 1ST semester (30 ECTS) at the PPCU
- 2nd semester (30 ECTS) at the UAM
- 3rd semester (30 ECTS) at the UB
- 4th semester will be devoted to the Master's Thesis (30 ECTS), by default in the home university, or alternatively in a company or in a research laboratory worldwide

All courses will be provided in English language to the students in all 3 partner institutions

Course	ECTS	Character
First semester (at PPCU)		
Functional Analysis	5	Compulsory
Parallel Computing Architectures	3	Compulsory
Numerical Analysis	4	Compulsory
Basic Image Processing Algorithms	5	Compulsory
Data Mining	5	Compulsory
FPGA-based Algorithm Design	5	Optional
Biomedical Signal Processing	4	Optional
Programming Methodology	5	Optional
Intelligent Sensors	3	Optional
TOTAL (offered/coursed)	44/30	

Second semester (at UAM)		
Applied Bayesian Methods	6	Compulsory
Biomedical Image Processing and Applications	6	Compulsory
Biometrics	6	Compulsory
Video Sequences Analysis for Video Surveillance	6	Compulsory
Tutored Research Project 1	6	Compulsory
TOTAL (offered/coursed)	30/30	
Third semester (at UB)		
Acquisition and Reconstruction	3	Compulsory
Image and Inversion	6	Compulsory Variational Methods and PDEs
Advanced Methods for Image Processing	3	Compulsory
Variational Methods and PDEs	6	Compulsory
Animated Images and Video Indexing	3	Compulsory
Management of IT Projects	3	Compulsory
Tutored Research Project II	6	Compulsory
TOTAL (offered/coursed)	30/30	
Fourth semester		
Master Thesis	30	Compulsory
TOTAL (offered/coursed)	30/30	
GRAND TOTAL (offered/coursed)	134/120	

APPLICATION

Applicants must fulfill the following requirements:

- Hold a Bachelor degree in Sciences from one of the three partner universities. Basic knowledge in signal and image processing will be valued.
- Average grade of at least “Good” according to local criteria in the courses concluded before the mobility.
- Adequate knowledge of written and spoken English, equivalent to B2 according to the CEFR.

Up to six students will be selected by each partner University. Students will be selected based on their Curriculum Vitae and on an interview by the local Committee,

- UAM students, please contact UAM coordinator (j.bescos@uam.es)

- Non UAM students should apply through the Program web page: <http://www.ipcv.eu/>

COORDINATORS

Universidad Autónoma de Madrid

Prof. Jesús Bescós, PhD

j.bescos@uam.es

Université de Bordeaux:

Prof. Aurélie Bugeau, PhD

aurelie.bugeau@labri.fr

Pazmany Peter Catholic University

Prof. Peter Szolgay, PhD

szolgay.peter@itk.ppke.hu