# 32077 - MVA - Machine Vision Applications

**Coordinating unit:** 230 - ETSETB - Barcelona School of Telecommunications Engineering  
**Teaching unit:** 731 - OO - Department of Optics and Optometry  
**Academic year:** 2015  
**Degree:** DOCTORAL DEGREE IN PHOTONICS (Syllabus 2007). (Teaching unit Optional)  
ERASMUS MUNDUS MASTER'S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND BIOPHOTONICS (Syllabus 2010). (Teaching unit Optional)  
MASTER'S DEGREE IN PHOTONICS (Syllabus 2009). (Teaching unit Optional)  
DOCTORAL DEGREE IN OPTICAL ENGINEERING (Syllabus 2007). (Teaching unit Optional)  
**ECTS credits:** 2,5  
**Teaching languages:** English

## Teaching staff

**Coordinator:** Elisabet Pérez  
**Others:** Maria Sagrario Millán

## Teaching methodology

Presencial Teaching + activities

## Learning objectives of the subject

Course focused on generic computer vision methodologies for machine vision systems and applications. Special attention is paid to machine vision applications based on image processing and information content analysis. Machine vision systems have been widely exploited in industry to perform tasks such as pattern recognition, visual surveillance and creating smart environments. A general overview is provided.
### Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Degree competences to which the content contributes:</th>
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<tbody>
<tr>
<td><strong>Illumination systems.</strong></td>
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<tr>
<td><strong>Cameras and imaging systems: optical imaging system; VIS and IR cameras; colour imaging; Multi and hyperspectral imaging; 3-D vision.</strong></td>
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<td><strong>Camera calibration. Human vision system vs. Computer vision.</strong></td>
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<td><strong>Optical pattern recognition based on correlation. Real time techniques.</strong></td>
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<td><strong>Applications: 6.1 Security systems. Optical identity (ID) tags and encryption techniques.</strong></td>
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### Qualification system

Evaluation will be based on three acts:
1. Computer simulation task (30%)
2. Quiz about the topic of optical pattern recognition. (30%)
3. Development of a topic proposed by the professor or the students. Written report and public defense and discussion. (40%)

### Regulations for carrying out activities

The usual in University teaching
32077 - MVA - Machine Vision Applications

Bibliography

Basic:


Complementary:

