

230624 - BIOM - Biometrics

Coordinating unit:	230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit:	739 - TSC - Department of Signal Theory and Communications
Academic year:	2019
Degree:	MASTER'S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Teaching unit Optional) MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Optional) MASTER'S DEGREE IN INFORMATION AND COMMUNICATION TECHNOLOGIES (Syllabus 2009). (Teaching unit Optional)
ECTS credits:	5
Teaching languages:	English

Teaching staff

Coordinator: JAVIER HERNANDO

Others: Sayrol Clois, Elisa

Degree competences to which the subject contributes

Specific:

1. Ability to apply information theory methods, adaptive modulation and channel coding, as well as advanced techniques of digital signal processing to communication and audiovisual systems.

Transversal:

2. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.
3. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

Teaching methodology

- Lectures
- Individual work (distance)
- Oral presentations
- Extended answer tests

Learning objectives of the subject

In this course principles and methods of biometric systems will be presented to the student. The course will also cover the state-of-the-art techniques in audio, image and video technologies, including Deep Learning



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Study load

Total learning time: 125h	Hours large group:	39h	31.20%
	Self study:	86h	68.80%

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Content

<p>1. Introduction</p>	<p>Learning time: 4h Theory classes: 2h Self study : 2h</p>
<p>Description: - Definitions, examples, applications</p>	
<p>2. System Architecture and Assessment</p>	<p>Learning time: 9h Theory classes: 3h Self study : 6h</p>
<p>Description: - System architecture: features, classifiers - Performance criteria</p>	
<p>3. Face recognition</p>	<p>Learning time: 18h Theory classes: 6h Self study : 12h</p>
<p>Description: - Face detection - Face recognition</p>	
<p>4. Fingerprint recognition</p>	<p>Learning time: 9h Theory classes: 3h Self study : 6h</p>
<p>Description: .</p>	
<p>5. Iris recognition</p>	<p>Learning time: 9h Theory classes: 3h Self study : 6h</p>
<p>Description: .</p>	

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<p>6. Speaker recognition</p>	<p>Learning time: 18h Theory classes: 6h Self study : 12h</p>
<p>Description: - Identification and verification - Diarization</p>	
<p>7. Other biometrics</p>	<p>Learning time: 44h 40m Theory classes: 8h 40m Self study : 36h</p>
<p>Description: - Signature - Hand geometry - Keystroke - Others</p>	
<p>8. Multimodal biometrics</p>	<p>Learning time: 8h Theory classes: 2h Self study : 6h</p>
<p>Description: - Fusion levels - Normalization and fusion</p>	

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Planning of activities

Partial control	Hours: 2h Theory classes: 2h
Oral presentation of individual work	Hours: 0h 20m Theory classes: 0h 20m
Final exam	Hours: 3h Theory classes: 3h
Description: Final examination.	

Qualification system

Final examination: 40%
Partial examination: 20%
Individual work and oral presentation: 40%

Bibliography

Basic:

Wayman, J. [et al.]. Biometric systems: technology, design and performance evaluation. London: Springer, 2005. ISBN 1852335963.

Complementary:

Bolle, R.M. [et al.]. Guide to biometrics. New York: Springer, 2004. ISBN 0387400893.