COURSE DATA

Data Subject	
Code	34317
Name	Vision of forms and colour
Cycle	Grade
ECTS Credits	4.5
Academic year	2018 - 2019

Study (s)

Degree	Center	Acad. year	Period
1207 - Degree in Optics and Optometry	Faculty of Physics	4	First term

Subject-matter

Degree	Subject-matter	Character
1207 - Degree in Optics and Optometry	16 - Optional subjects	Optional
1207 - Degree in Optics and Optometry	20 - Visual perception: mechanisms and clinical applications	Optional

Coordination

Name	Department
CAPILLA PEREA, PASCUAL	280 - Optics and Optometry and Vision Sciences
MALO LOPEZ, JESUS	280 - Optics and Optometry and Vision Sciences

SUMMARY

English version is not available

Se presenta el fenómeno de la visión como un proceso de extracción de información a partir de lasimágenes que se forman en el plano imagen del sistema de adquisición, en el caso del sistema visualhumano, las imágenes retinianas. El objetivo de este proceso es la representación de la informaciónde manera que se puedan resolver problemas de identificación de objetos. En este proceso, lossensores que se aplican a la señal de entrada (neuronas del LGN y V1) son extractores decaracterísticas cuyo comportamiento determina que información es retenida y cual es eliminada. Eneste contexto, el rol de características tales como bordes, texturas y colores es esencial.El curso consta de dos grandes bloques: (1) el análisis de la visión de texturas, y (2) el análisis de lavisión del color.El curso introduce el material necesario para la caracterización lineal de los sensores de bordes ytexturas en V1. También se presenta su comportamiento no lineal, relacionado con la adaptación alcontraste. En cuanto al color, se presentan las limitaciones de la colorimetría triestímulo lineal(introducida en la asignatura de

"Mecanismos y Modelos de la Visión"), dando paso a la consideraciónde las dimensiones perceptuales de los estímulos cromáticos y del comportamiento no lineal de losmodelos que explican la apariencia del color.Al final del curso los estudiantes conocen los elementos básicos de un modelo sencillo de observadorespacio-cromático que puede aplicarse a imágenes reales

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Es necesario haber cursado "Psicofísica" (de 2º) y "Mecanismos y Modelos de la Visión" (de 3º)

OUTCOMES

1207 - Degree in Optics and Optometry

- To have and to understand the fundamentals of Optometry for its correct clinical and healthcare application.
- Knowing how to apply the knowledge acquired to professional activity, knowing how to solve problems and develop and defend arguments.
- Being able to gather and interpret relevant data to make judgments.
- Being able to transmit information, ideas, problems and solutions to both a specialized and non-specialized audience.
- Development of learning skills necessary to undertake further studies with a high degree of autonomy.
- To know the applicable legislation in professional practice, with special attention to matters of gender equality between men and women, human rights, solidarity, sustainability, protection of the environment and promotion of the culture of peace.
- To know how the visual system adapts to the lighting level and the chromaticity of light.
- To know how the visual system adapts to the frequency content (space-time) of complex scenes.
- To know the architecture and function of the areas of the extra-striated cortex with relevant participation in visual perception, as well as their interactions.
- To know the way in which the information of the various perceptual dimensions is integrated to make judgments about the scene.

LEARNING OUTCOMES

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WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Tutorials	7,50	100
Laboratory practices	7,50	100
Study and independent work	35,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	10,00	0
Resolution of case studies	10,00	0
TOTAL	**110,00**	

TEACHING METHODOLOGY

English version is not available

EVALUATION

English version is not available

REFERENCES

Basic

- Apuntes de clase y notas proporcionadas por el profesor (disponibles en el aula virtual)
  B. Wandell. Foundations of Vision. Sinauer Assoc. 1995
  M. Fairchild. Color appearance models. Wiley. 2005
  P. Capilla et al. Introducción a la Colorimetria. Univ. Valencia 2002
  P. Capilla et al. Tecnología del Color. Univ. Valencia 2002

Additional

- Gaskill. Linear Systems, Fourier Transforms, and Optics (Wiley Series in Pure and Applied Optics). Wiley 1978