370607 - OPTIVISUAL - Visual Optics

Coordinating unit: 370 - FOOT - Terrassa School of Optics and Optometry
Teaching unit: 731 - OO - Department of Optics and Optometry
Academic year: 2019
Degree: BACHELOR'S DEGREE IN OPTICS AND OPTOMETRY (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6

Teaching languages: Spanish

Teaching staff
Coordinator: Tàpies Anton, Montserrat
Alvarez Muñoz, José Luis

Degree competences to which the subject contributes

Specific:
1. Technical english applied to optics and optometry
2. Understanding the mechanism of imaging and information processing in the visual system.
3. Being able to take, treat, represent and interpret experimental data. "Use basic laboratory equipment and techniques"
4. Establish protocols, analyze results and elaborate the corresponding reports
5. Evaluate the process of formation of the optical image in the retina and the transmission and information processing in the brain
6. Know interpret functional and health test results of the visual system.
7. Value the effects (perceptual changes) caused by the glasses, optical aids and protection elements in the visual system.

Generical:
11. Define the general objectives and to carry out a specific group
10. Display information orally and in writing of reasonably and coherent.
8. Extract the main points of a text or any source of information (oral or written)
9. Synthesize and organize information to convey it effectively orally and / or written
13. Locate new information and the interpretation of it in its context.
15. Working with evidence, methodology and rigour.
14. Value the methods used to achieve the objectives.
12. Assessing the acquisition of the course objectives.
Teaching methodology

On the one hand the learning hours consist of lectures (group means) in which the teachers make a brief introduction to the general learning objectives related to the basic concepts of matter. Later, through practical exercises we try to motivate and engage students to participate actively in their learning. It uses material support in the form of detailed syllabus by ATENEA: learning objectives for content, concepts, examples, programming and evaluation activities of learning and literature. On the other hand, can also consist of classes of problems (which works, generally in groups of 3 to 4 members), by solving exercises and numerical problems related to the specific learning objectives of each content of the course. In these problems sessions we try to incorporate some generic skills such as teamwork competition. Therefore developed techniques for cooperative learning in the classroom.

The last type of hours of learning is to carry seven lab, 4 attendance and 4 non-attendance. The attendance is made in pairs, and can develop basic skills in a laboratory-type instruments of visual perspective and start students in applying the scientific method in solving problems.

Learning objectives of the subject

Understand the process of image formation and properties of optical systems.
Recognize the eye as optical system.
Understand and handle basic laboratory equipment and techniques.
Knowing the parameters and models of eyes.
Understanding the factors that limit the quality of the retinal image.
Being able to perform psychophysical tests to determine levels of visual perception.
Knowing the properties and functions of the various elements of the visual system.
Understand the principles and have the ability to measure, interpret and treat abnormalities of binocular vision and accommodative.
Being able to measure and interpret the data obtained in psychophysical assessment of visual perception.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 156h</th>
<th>Hours large group: 0h</th>
<th>0.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group:</td>
<td>60h</td>
<td>38.46%</td>
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<tr>
<td>Hours small group:</td>
<td>12h</td>
<td>7.69%</td>
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<tr>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Self study:</td>
<td>84h</td>
<td>53.85%</td>
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</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Learning time</th>
<th>Theory classes</th>
<th>Practical classes</th>
<th>Laboratory classes</th>
<th>Guided activities</th>
<th>Self study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Introduction to Visual Optics</strong></td>
<td>5h</td>
<td></td>
<td></td>
<td></td>
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<td>2h</td>
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<tr>
<td><strong>2. Model of the optical system of the eye. Training Images</strong></td>
<td>46h</td>
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<td>23h</td>
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<td><strong>3. Optics of the accommodating</strong></td>
<td>21h</td>
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<td>13h</td>
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<tr>
<td><strong>4. Optics of refractive error and its neutralization</strong></td>
<td>64h</td>
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<td>38h</td>
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<td><strong>5. Optical quality of the retinal image.</strong></td>
<td>14h</td>
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<td>8h</td>
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</tbody>
</table>
The final mark is the partial sum of the following qualifications:

\[ QF = 0.15 \times PAC1 + 0.15 \times PAC2 + 0.5 \times PAF + 0.1 \times PNP + 0.1 \times PAL \]

- **QF**: final results
- **PAC1**: first test of continuous assessment
- **PAC2**: second test of continuous assessment
- **PAF**: final test
- **PNP**: online practical test
- **PAL**: laboratory test

**Regulations for carrying out activities**

If not done any of the laboratory activities will be considered as non-rated. The lab attendance will not be guided. So we proposed to do, and optionally as a preparation, the theoretical resolution of some practical cases similar to those found at the laboratory.

**Bibliography**

**Basic:**


**Complementary:**