The students will get an insight into the fundamentals of light-tissue interactions, and how they can be utilized to image tissues in clinical settings. The distinction between medical imaging and the important and widespread field of biological imaging will be clearly highlighted. After some initial considerations about light propagation in tissues, a survey of several important technologies such as optical coherence tomography and diffuse optical tomography will be presented. The course will conclude with a brief in-class laboratory session where the students will learn how to design experiments, use a demonstration instrument to acquire data from humans and analyze the data. A visit to a hospital or health center could also be included, if necessary. A visit to a hospital or health center might also be organized.

13187 - MOI - Medical Optical Imaging

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

Teaching staff
Coordinator: T. Durduran
Others: J.P. Torres

Teaching methodology
Presencial Teaching + activities

Learning objectives of the subject

The students will get an insight into the fundamentals of light-tissue interactions, and how they can be utilized to image tissues in clinical settings. The distinction between medical imaging and the important and widespread field of biological imaging will be clearly highlighted. After some initial considerations about light propagation in tissues, a survey of several important technologies such as optical coherence tomography and diffuse optical tomography will be presented. The course will conclude with a brief in-class laboratory session where the students will learn how to design experiments, use a demonstration instrument to acquire data from humans and analyze the data. A visit to a hospital or health center could also be included, if necessary. A visit to a hospital or health center might also be organized.
<table>
<thead>
<tr>
<th>Content</th>
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<tbody>
<tr>
<td>(ENG) - Clinical Imaging</td>
<td>Degree competences to which the content contributes:</td>
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<tr>
<td>(ENG) - Light tissue interactions</td>
<td>Degree competences to which the content contributes:</td>
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<tr>
<td>(ENG) - Optical coherence tomography</td>
<td>Degree competences to which the content contributes:</td>
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<td>(ENG) - Diffuse optics</td>
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<td>(ENG) - Laboratory</td>
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<td>(ENG) - Biomedical optics seminar ICFO</td>
<td>Degree competences to which the content contributes:</td>
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<tr>
<td>(ENG) - Webinar</td>
<td>Degree competences to which the content contributes:</td>
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<tr>
<td>(ENG) - Emerging technologies</td>
<td>Degree competences to which the content contributes:</td>
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### 13187 - MOI - Medical Optical Imaging

#### Qualification system

40% reports,  
40% class participation,  
20% laboratory.  
Note: Late submissions will be penalized.

#### Regulations for carrying out activities

The usual in University teaching

#### Bibliography