

## 370521 - BASICA - Basic Contact Lenses

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: Catalan

### Teaching staff

Coordinator: Genís Cardona (<http://futur.upc.edu/GenisCardonaTorradeplot>)

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### Degree competences to which the subject contributes

Specific:

1. Determine the optical parameters of contact lenses in relation to the functionality of the visual system.
2. Determined by scanning objective procedures if eye conditions are appropriate or contraindicate the use of contact lenses of any material.
3. Obtain oculometrics data to determine the type and parameters of contact lenses recommended for correcting lower order aberrations natural eye (ametropias) and higher order (induced), in order to provide patients a higher quality of the visual system.

Generical:

5. - Know the influence of the visual health in the education and the global well-being (and the development)
  - Know the influence of the visual health for the development
  - Know the fundamental values of the bioethics
  - Know the model of sustainable development
  - Know the environmental and social impacts of the technology
6. Adaptation of all the fields of professional activity envers compatible aspects with the medium ambient (recycling, reuse of the materials,...)
7. To think critically about clinical ethical issues, involved in the political and social exercise of optometry
9. - Implementation of the code of ethics and good practice of the profession
  - Adapting the technological means to respond to the needs of people with disabilities.
8. Being able to collaborate on initiatives, both locally and globally, committed to improving the visual health of the population

### Teaching methodology

The subject consists of 2 hours a week of lectures in class (large group), 15 sessions of 2 hours each, practice in the laboratory and 15 sessions of 2 hours of conduced activity in the laboratory.  
To get the most out of the subject follow the directions and deadlines that are described through the digital campus Athena.

### Learning objectives of the subject

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At the end of the course Basic contact lenses, the student should be able to:

- Understand the features and functionality of different types of contact lenses and ocular prostheses.
- Knowing the geometry of the contact lens and the physicochemical properties of the materials used for their manufacture, and assign it to the eye and refractive characteristics of each patient.
- Understand and use clinical protocols and instrumental exploration eye associated with contact lens adaptation.
- Understand the solution maintenance, diagnosis and treatment, and assign them to the characteristics of lenses and ocular structures.

### Study load

|                           |                     |     |        |
|---------------------------|---------------------|-----|--------|
| Total learning time: 144h | Hours large group:  | 0h  | 0.00%  |
|                           | Hours medium group: | 32h | 22.22% |
|                           | Hours small group:  | 28h | 19.44% |
|                           | Guided activities:  | 0h  | 0.00%  |
|                           | Self study:         | 84h | 58.33% |

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### Content

|   |  |
|---|--|
| <p>1. INTRODUCTION TO THE SUBJECT</p>   | <p>Learning time: 6h<br/>Theory classes: 2h<br/>Self study : 4h</p>  |
| <p>Description:<br/>1.1 Terminology used in contact lens<br/>1.2 History of contact lens<br/>This content works:<br/>A historical introduction and concepts to prepare the blocks following a common foundation with clear and simple.</p>  |  |
| <p>2. EVALUATION OF THE OCULAR SURFACE</p>  | <p>Learning time: 30h<br/>Theory classes: 6h<br/>Laboratory classes: 6h<br/>Guided activities: 6h<br/>Self study : 12h</p> |
| <p>Description:<br/>2.1 Anatomy and physiology of the cornea and Annexes<br/>Keratometry and topography Eye 2.2<br/>2.3 Assessment of qualitative and quantitative tear film<br/>Corneal Estesimetría 2.4<br/>This content works:<br/>Anatomical description of the anterior ocular structures and detailed explanation of the tools and methodologies used to measure its main parameters as a basis for future choice of contact lens that is most suitable for each patient.<br/>Related activities:<br/>Will be held practice sessions 1 and 6, for keratometry, corneal topography and estesimetría.</p> |  |

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| <p><b>3. MATERIALS, DEPOSITS AND MAINTENANCE SOLUTIONS</b></p>   | <p>Learning time: 34h<br/>Theory classes: 8h<br/>Laboratory classes: 6h<br/>Guided activities: 4h<br/>Self study : 16h</p> |
| <p>Description:<br/>3.1 Materials used in the manufacture of contact lenses<br/>3.2 Deposits in contact lenses<br/>3.3 Systems of Care and maintenance of contact lenses<br/>This content works:<br/>Description of the different materials used to manufacture contact lenses and their characteristics, as well as deposits that form on the surface and the care and maintenance systems used to clean and disinfect the lenses.<br/>Related activities:<br/>Will be held practice sessions 7 and 8, corresponding to the identification of contact lens parameters and the study of care and maintenance solutions.<br/>There will be a first evaluation of small group practices in the laboratory.<br/>Also offers an initial assessment of theoretical knowledge in large group theory.</p> |  |
| <p><b>4. GEOMETRY AND DESIGN TOOLS RPG and hydrogels, PRODUCTION AND VERIFICATION PARAMETERS</b></p>   | <p>Learning time: 28h<br/>Theory classes: 6h<br/>Laboratory classes: 4h<br/>Guided activities: 6h<br/>Self study : 12h</p> |
| <p>Description:<br/>4.1 Geometry and design of GP lenses<br/>4.2 Geometry and design of hydrogel contact lenses<br/>4.3. Verification of contact lens parameters RPG<br/>4.4. Verification parameters of hydrogel contact lenses<br/>4.5. Manufacture of GP lenses<br/>4.6. Production of hydrogel contact lenses<br/>This content works:<br/>Description of the different designs of GP contact lenses and hydrogel, as well as the methods used to verify parameters. A few general remarks on the manufacture of hydrogel lenses and RPG.<br/>Related activities:<br/>Will be held practice sessions 2 and 3, corresponding to the verification of parameters GP lenses and hydrogel.</p>   |  |

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| <b>5. OPTICS CONTACT LENSES AND PRELIMINARY EXAMINATION</b>  | Learning time: 52h<br>Theory classes: 8h<br>Laboratory classes: 14h<br>Guided activities: 14h<br>Self study : 16h |
| <p>Description:</p> <p>5.1. Optical system formed by the eye and contact lens</p> <p>5.2. Preliminary tests on the adaptation of the different types of contact lenses</p> <p>This content works:</p> <p>It brings together all the knowledge worked on the above topics to discuss the optical effect of fitting a contact lens in different ametropia. Initial approach to the previous tests necessary for any contact lens fitting.</p> <p>Related activities:</p> <p>Will be held practice sessions 4 and 5, for measurement of ocular parameters and evaluation of the tear film and practice sessions 9 and 10, corresponding to the adaptation of GP contact lenses and hydrogel.</p> <p>There will also be a screening test in small group practices in the laboratory.</p> <p>Also be made test final course assessment in large group theory.</p> |   |

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### Planning of activities

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| <p><b>1. KERATOMETRY, TOPOGRAPHY AND CORNEAL ESTESIOMETRIA</b></p>  | <p>Hours: 12h<br/>Laboratory classes: 6h<br/>Guided activities: 6h</p> |
| <p>Description:<br/>Practices 1 and 6<br/>Working in pairs lab Contactology with duration of 2 hours per practice. Students, as part of their learning has led to the prior reading practice and identify the objectives of it.<br/>The laboratory should carry out the experimental part.</p> <p>Support materials:<br/>All materials and instruments for conducting practice<br/>Written detailed questionnaire for each practice</p> <p>Descriptions of the assignments due and their relation to the assessment:<br/>The evaluation of the practice is done with the script for the evaluation of the practice, given that the student, and individual events.</p> <p>Specific objectives:<br/>At the end of practice the student or student should be able to:<br/>Make careful measurements of the corneal radii with different types of queratòmetres and surveyors with the provisions in the laboratory<br/>Being able to perform the technique of measurement of corneal sensitivity</p>          |  |
| <p><b>2. MATERIALS, DEPOSITS AND MAINTENANCE SOLUTIONS</b></p>  | <p>Hours: 8h<br/>Laboratory classes: 4h<br/>Guided activities: 4h</p>  |
| <p>Description:<br/>Practices 7 and 8<br/>Working in groups of 2 to 4 students. The duration is 2 hours per session. The completion of the laboratory practices will Contactology. The laboratory should carry out the experimental part, and as directed learning is planned that students do after reading the script and identify targets.</p> <p>Support materials:<br/>All materials for the realization of practical<br/>Written detailed questionnaire for each practice</p> <p>Descriptions of the assignments due and their relation to the assessment:<br/>The evaluation of the practice is done with the script for the evaluation of the practice, given that the student, and individual events.</p> <p>Specific objectives:<br/>At the end of the activity, the student or student should be able to:<br/>Recognize different types of contact lenses that are in the lab and identify the use and suitability of different maintenance solutions for different types of contact lenses.</p> |  |
| <p><b>3. VERIFICATION PARAMETERS AND CONTACT LENS RPG HYDROGEL</b></p>  | <p>Hours: 10h<br/>Laboratory classes: 4h<br/>Guided activities: 6h</p> |

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### Description:

Practice 2 and 3

Working in groups of 2 to 4 students. The duration is 2 hours per session. The completion of the laboratory practices will Contactology. The laboratory should carry out the experimental part, and as directed learning is planned that students do after reading the script and identify targets

### Support materials:

All instruments for the realization of practical  
Contact lenses of different materials  
Written detailed questionnaire

### Descriptions of the assignments due and their relation to the assessment:

The evaluation of the practice is done with the script for the evaluation of the practice, given that the student, and individual events.

### Specific objectives:

At the end of the activity, the student or student should be able to:  
Verify the parameters of hydrogel lens material and RPG.

### 4. MEASURING PARAMETERS OF EYE, EVALUATION AND LLAGRIMAL FILM ADAPTATION OF TOOLS AND HYDROGEL RPG

Hours: 26h

Laboratory classes: 12h

Guided activities: 14h

### Description:

Practices 4 and 5 and 9 and 10 practices

Working in pairs lab Contactology with a duration of 2 hours per practice. Students, as part of their learning directed to do prior reading practice and identify the objectives of it.

The laboratory should carry out the experimental part.

### Support materials:

Own instruments for conducting practice  
All materials for the realization of practical

### Descriptions of the assignments due and their relation to the assessment:

The evaluation of the practice is done with the script for the evaluation of the practice, given that the student, and individual events.

### Specific objectives:

At the end of the activity, the student or student should be able to:  
Get the look of the various measures necessary for the selection of the parameters of a contact lens  
Knowing how to perform various tests to assess the quality of the tear  
Learn to draw and a hydrogel contact lens and to evaluate the adaptation and RPG

### 5. TESTING INDIVIDUAL SKILLS ASSESSMENT PILOT

Hours: 4h

Laboratory classes: 4h

### Description:

Single laboratory test

Resolution of issues and demonstration of clinical skills and practices learned in the laboratory.

### Support materials:

Screenplay practices.

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Descriptions of the assignments due and their relation to the assessment:  
Each of these two tests comprise 10% of the final grade for the course.

Specific objectives:

After the test, the student or student should be able to:  
Be aware of skills shortages and related know-how, technical and clinical course.

### 6. EVALUATION OF INDIVIDUAL TESTS THEORETICAL KNOWLEDGE

Hours: 4h  
Theory classes: 4h

Description:

Individual test in the classroom  
Production of two years related to the contents of the blocks comprising the subject of theoretical

Support materials:

Educational material uploaded to Athena.

Descriptions of the assignments due and their relation to the assessment:

The first test provides 30% of the overall qualification. The second test provides 50%

Specific objectives:

After the test, students should be able to:  
Be aware of your skills and theoretical knowledge gaps related to the subject and, if necessary, be interested to remedy these shortcomings.

### Qualification system

There will be two written tests E1 and E2 (80%). Second test will be of all subjects.

E1 Written exam (30%)

E2 Written exam (50%)

There will be lab test (10%) and students will need to solve one or several tasks (up to 10%)

### Regulations for carrying out activities

- Required attendance at all activities evaluated.
- If not done any of the activities evaluated, is considered as not rated (0).



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### Bibliography

#### Basic:

Saona Santos, Carlos Luis. Contactología clínica. 2a ed. Barcelona: Masson, 2006. ISBN 8445816373.

Hom, Milton M. Manual de prescripción y adaptación de lentes de contacto. 3a ed. Barcelona: Elsevier Masson, 2007. ISBN 9788445817605.

Contact lenses. 4th ed. Oxford: Butterworths-Heinemann, 1997. ISBN 0750618191.

Efron, Nathan. Contact lenses A-Z. Oxford: Butterworth-Heinemann, 2002. ISBN 0750653027.

Gasson, Andrew. The contact lens manual: a practical fitting guide. 2nd ed. Oxford: Butterworth-Heinemann, 1998. ISBN 0750631872.

Lowther, Gerald E. Contact lenses: procedures and techniques. 2nd ed. Boston: Butterworth-Heinemann, 1992. ISBN 0750691875.

Veys, Jane. Essential contact lens practice. Oxford: Butterworth-Heinemann, 2002. ISBN 0750649127.

Efron, Nathan. Contact lens complications. Oxford: Butterworth-Heinemann, 1999. ISBN 0750605820.

Mandell, Robert B. Contact lens practice. 4th ed. Springfield: Charles C. Thomas, 1988. ISBN 0398055092.

The tear film: structure, function and clinical examination. Oxford: Butterworth-Heinemann, 2002. ISBN 0750641967.

#### Others resources:

Students will be provided, via the ATENEA platform, with several recommended or compulsory papers, as well as, with the slides used in class