### Degree competences to which the subject contributes

**Specific:**
1. Acquire skills in patient care
2. Technical english applied to optics and optometry
3. Applying the protocols of public health in relation to visual health.
4. Applying an specific anamnesis to extract relevant information.
5. Ability to write and interpret a report
6. Detecting the need to derive the patient with the corresponding report to the appropriate professional and be able to collaborate keeping the follow-up of the patient
7. Detecting adverse reactions caused by systemic and topical medication.
8. Designing protocols for prevention of visual health
9. Establish protocols, analyze results and elaborate the corresponding reports
10. Know establish an optimal therapeutic relationship, know communicate with the patient
11. Being able to take, treat, represent and interpret experimental data. "Use basic laboratory equipment and techniques"
12. Being able to perform literature searches.
13. Value the need to realize complementary tests. Realize and interpret correctly the results of these tests (visual field, layouts,...)

**Generical:**
14. Adaptation of all the fields of professional activity envers compatible aspects with the medium ambient (recycling, reuse of the materials,...)
15. Consistently communicate the basic knowledge of optometry acquired. (Explain orally and in writing the basic knowledge)
16. Communicate (Advise and guide) in a responsible and efficient way with the patient and his environment (in order...
to ensure compliance with treatment)

23. Be able to organize the work of a group of people to attain a previously determined aim in the due terms

28. Encourage methodical work, rigorous, consistent and innovative

30. Being able to collaborate on initiatives, both locally and globally, committed to improving the visual health of the population

32. Locate new information and the interpretation of it in its context.

33. Working with evidence, methodology and rigour.

### Teaching methodology

Directed learning hours are, on the one hand, to give lectures (large group) in which the teacher makes a short presentation to introduce the general learning objectives and concepts of matter. Subsequently, through seminars delves deeper into the themes involving the student to participate actively in their learning. In addition, cooperative learning techniques developed in the classroom.

Moreover practice sessions are held where the student starts using a criterion of rational drug use in problem solving and basic clinical skills. To perform these activities directed learning support material is used by ATENEA (: learning objectives for content, scripts activities (where, apart from a brief theoretical explanation for different activities are proposed and the methodology to be employed), tests self, examples, programming and evaluation activities directed learning and bibliography).

Autonomous learning hours are the hours that the student will devote to the study of matter in order to overcome the different tests evaluated. Also included in this group the hours spent resolving self questionnaires of the different contents by virtual campus ATENA.

### Learning objectives of the subject

At the end of Ocular Pharmacology course, the student should be able to:

- Interpret data pharmacokinetic, pharmacodynamic and toxicological properties of drugs used in the prevention and treatment of eye conditions, diagnostic tests and visual examinations.
- Identify and characterize the different dosage forms and routes of administration of the drugs used in the prevention and treatment of eye conditions, diagnostic tests and visual examinations.
- Distinguish the route of administration as the therapeutic goal
- Describe, justify and apply the clinical criteria governing the rational use of medicines for the prevention and treatment of eye conditions, diagnostic tests and visual examinations
- Apply the necessary clinical procedures for early detection of ocular adverse reactions
- Establish a line of action against ocular adverse reactions
- Describe and apply basic standards of patient care.
### 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% |
# Content

## 1. PHARMACOLOGICAL BASES

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 41h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Terminology basic pharmacological</td>
<td>Practical classes: 4h 12m</td>
</tr>
<tr>
<td>1.2 Legal aspects related to the medication</td>
<td>Laboratory classes: 6h 48m</td>
</tr>
<tr>
<td>1.3 Principles of Pharmacodynamics General</td>
<td>Self study : 30h</td>
</tr>
<tr>
<td>1.4 General Principles of Pharmacokinetics</td>
<td></td>
</tr>
<tr>
<td>1.5 Ocular Pharmacokinetics</td>
<td></td>
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<tr>
<td>1.6 How to information on Pharmacology</td>
<td></td>
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<tr>
<td>1.7 Medicinal and routes of drug administration</td>
<td></td>
</tr>
</tbody>
</table>

This content works:
The basic concepts of ocular pharmacology.

**Related activities:**
They were conducted practices 1 and 2 evaluated at the end of each session and the global test practices. A single proof of continuous assessment in the classroom during large group sessions.

## 2. PHARMACOLOGICAL GROUPS

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 77h</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Mydriatic and cycloplegic Miotics</td>
<td>Practical classes: 25h</td>
</tr>
<tr>
<td>2.2 Antiglaucoma</td>
<td>Laboratory classes: 8h</td>
</tr>
<tr>
<td>2.3 Anti-inflammatory</td>
<td>Self study : 44h</td>
</tr>
<tr>
<td>2.4 Antiallergic</td>
<td></td>
</tr>
<tr>
<td>2.5 Antiinfectives</td>
<td></td>
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<tr>
<td>2.6 Local Anesthetics</td>
<td></td>
</tr>
<tr>
<td>2.7 Pre and post surgical treatments</td>
<td></td>
</tr>
<tr>
<td>2.8 Requirements for ocular topical preparations</td>
<td></td>
</tr>
<tr>
<td>2.9 Cleaning solutions and maintenance of contact lenses</td>
<td></td>
</tr>
<tr>
<td>2.10 Artificial Tear</td>
<td></td>
</tr>
</tbody>
</table>

This content works:
Basic aspects related to the mechanism of action, dosage, route of administration, indications and adverse reactions of different groups of drugs that are used in the treatment of most common eye diseases, basic clinical procedures and assessment of refractive status.

**Related activities:**
Performed a practices 3, 4, 5 and 6 evaluated at the end of each session and the overall test of practice. A single test of continuous assessment in the classroom during large group sessions.
### 3. DIAGNOSTIC PHARMACS

**Description:**
- 3.1 Diagnostic Dyes
- 3.2 Pharmacs for the diagnosis of visual disturbances related to the nervous system

This content works:
Basic aspects related to the mechanism of action, dosage, route of administration, indications and adverse pharmac groups that are involved in the detection and diagnosis of various eye disorders.

**Related activities:**
A medium group activity is assessed individually at the end of the session.

### 4. OCULAR PHARMACOVIGILANCE

**Description:**
- 4.1 Basics in Pharmacovigilance
- 4.2 The risk of occurrence of adverse pharmac reaction (ADR)
- 4.3 Major pharmacs groups causing RAM
- 4.4 Actions optometrist clinics
- 4.5 Clinical cases of ocular Pharmacovigilance

This content works:
Basic aspects related to early detection and clinical proceedings before an adverse ocular reaction.

**Related activities:**
It carries out the practice 7 evaluable at the end of the session and global practice test, performed at the end of the content 4. It also carries out an individual test for continuous evaluation of the content 3 and 4 during large group sessions.
### Planning of activities

<table>
<thead>
<tr>
<th><strong>1. PRACTICES</strong></th>
<th><strong>Hours:</strong> 24h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laboratory classes:</strong> 24h</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Activities that must be done in groups of 2-3 students with a duration of 2 hours. The experimental part was conducted in the laboratory. Directed learning as the student is scheduled to make a preliminary reading of the screenplay and respond at the beginning of each practice a questionnaire on the objectives, and some theoretical concepts contained in the script (preliminary survey).

The practices are at the Laboratory of Ocular Physiology and Pharmacology, Level 1.

**Support materials:**
All material and equipment necessary for the implementation of practices will provide the start of each session.
Detailed script of the practice (Word) ATENEA. It is mandatory to bring the script in paper format to each session.

**Descriptions of the assignments due and their relation to the assessment:**
The results of the preliminary questionnaire must be delivered to the teacher at the end of each practice session.
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Specific objectives:
At the end of practice the student should be able to:

Practice 1. Information Sources Pharmacology
List the differences between the sources of information.
Choosing the most appropriate sources depending on the purpose of the literature search.

Practice 2. Specialty formulations and routes of drug administration
Discriminating the route of administration according to the therapeutic target.
Remember how to express the concentration of drugs in medicine.
Establish the meaning of different symbols on the packaging of pharmaceutical specialties.
List the distinguishing characteristics of the dosage forms of topical ocular administration.
Correctly calculate dosage.
Describe the therapeutic goal of each of the channels used in ophthalmology.
Describe the advantages and disadvantages of each approach used in ophthalmology.
List the rules for the administration of a topical ocular preparation and justification.

Practice 3. Requirements for ocular topical preparations
List the requirements that have to meet the eye and justify topical preparations.
Recognizing the storage conditions that can affect sterility.
Remember the rules on suspended particles in the drops.
Describe the operation of a turbidimeter.
Remember the pH range within which there is no damage to ocular tissues.
Infer the importance of the tear as a buffer against changes in pH or isotonicity.
Identify and justify what kind of patient will have trouble with the administration of a drug topically.
Remember the margin of isotonicity.
Deduct dosage forms that must be isotonic.
Describe the process suffered a tissue in conditions of hyper-or hypotonicity.

Practice 4. Cleaning and maintenance solutions for contact lenses
Identify the active maintenance of a solution in line with their instructions.
Describe the basic processes of maintaining a contact lens and the active principles involved.
Individually assign a maintenance system.
Remember the main disinfectants maintenance solutions.
Establish the difference between a disinfectant and preservative.
Describe the mechanisms of action of cleaners, disinfectants and moisturizers.
Differentiate between the cleaners.
Differentiate between moisturizers, conditioners and lubricants for contact lenses.

3. GLOBAL PRACTICE TEST

Description:
Conducting an examination on the contents of individual practice.

Support materials:
Practice outlines delivered by the student.

<table>
<thead>
<tr>
<th>3. GLOBAL PRACTICE TEST</th>
<th>Hours: 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 4h</td>
</tr>
</tbody>
</table>


### 5. INDIVIDUAL TEST OF CONTINUOUS ASSESSMENT

**Description:** Performing in the classroom on an individual exam.

**Support materials:**
- Series of self tests with multiple choices.
- Notes theme (PowerPoint) available in ATENEA by listing the specific objectives of each topic. Writing for the seminars entertained by the student.

**Descriptions of the assignments due and their relation to the assessment:**
- Resolution of the exercise by the student adjust the set time. The score in this test represents two thirds of the working practices. The final practice note has a specific gravity of 30% in the overall rating of the course.

**Specific objectives:**
- The students to be able to demonstrate that it has achieved the specific objectives of the topics included in each practice.

<table>
<thead>
<tr>
<th>Hours: 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 4h</td>
</tr>
</tbody>
</table>

### 6. SEMINARS

**Description:**
- Working in pairs or in groups of 3-4 students on a theoretical issue from a script. This type of activity is presented as reinforcement of large-group lectures.

**Support materials:**
- Writer’s Workshop (PDF ATENEA) and reading material, to be provided at the beginning of the activity. It is mandatory to bring the script in paper format to each session.

**Descriptions of the assignments due and their relation to the assessment:**
- Resolution of the exercise by the student adjust the set time. Represents 50% of the overall grade of the course.

**Specific objectives:**
- The student to be able to demonstrate that it has achieved the specific objectives of the topics included in each of the individual tests.

<table>
<thead>
<tr>
<th>Hours: 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical classes: 4h</td>
</tr>
</tbody>
</table>
Qualification system

The final note is the sum of the partial qualifications and includes:

Final note = 0.2 T1 + 0.4 T2 + 0.2 P1 + 0.2 P2

T: qualification theory (tests)
P: qualification practices (Short questions)

Regulations for carrying out activities

If there is any activity or laboratory evaluation is measured continuously with a zero.
In no case can have any form of learning control or testing.

Bibliography

Basic:

Complementary:

Others resources: