In addition to the general offer of courses taught in English, some Centers offer for incoming students English Friendly Courses (EFC): subjects taught in Spanish or Basque, in which the syllabus summary, lecturer tutoring, examinations and/or papers are available in English.

### English Friendly Courses taught in SPANISH:

#### FACULTY OF MEDICINE AND NURSING (327)

<table>
<thead>
<tr>
<th>COURSE</th>
<th>SEMESTER</th>
<th>CREDITS</th>
<th>SCHEDULE¹</th>
</tr>
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<tbody>
<tr>
<td>27222 Farmacología General y Clínica</td>
<td>Sep. 2021 - Jan. 2022</td>
<td>6</td>
<td>M</td>
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<tr>
<td>27219 Microbiología e Inmunología</td>
<td>Sep. 2021 - Jan. 2022</td>
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<td>27277 Fundamentos de Farmacología Médica</td>
<td>Sep. 2021 - Jan. 2022</td>
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<td>27276 Microbiología clínica e infección</td>
<td>Sep. 2021 - Jan. 2022</td>
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<td>27295 Genética Médica</td>
<td>Sep. 2021 - Jan. 2022</td>
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<td>27263 Farmacología Médica Aplicada</td>
<td>Jan. 2022 - May 2022</td>
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<td>27894 Farmacología en Fisioterapia</td>
<td>Jan. 2022 - May 2022</td>
<td>6</td>
<td>A</td>
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</tbody>
</table>

¹ SCHEDULE: Morning (M)/ Afternoon (A): begins at 13.30. By clicking the subject’s name, its Syllabus will appear.
General and Clinical Pharmacology is a core subject in the 3rd year of the Undergraduate Course in Dentistry. The main objective of this subject is that the students learn to use drugs rationally in their future dental practice. The subject is divided into three main blocks:

I. In the first, general aspects of pharmacology, pharmacokinetics and pharmacodynamics are covered. These concepts will be used in the next two blocks in the subject.

II. In the second block, the most commonly used and prescribed drugs in dental clinical practice will be studied in depth.

III. In the third, drugs that although not currently prescribed in dental practice that can have an influence in the clinical practice or patient management will be studied.

1. Content of the subject

4.1. Theoretical content

Block I

Topic 1. Introduction to Pharmacology

Topic 2. Absorption of drugs

Topic 3. Distribution of drugs in the body

Topic 4. Metabolism of drug excretion

Topic 5. Pharmacodynamics. Drug action mechanism

Topic 6. Adverse reactions to drugs. Pharmacological interactions


Block II

Topic 9. Local anesthetics

Topic 10. Benzodiazepines. Other anxiolytic and sedating-hypnotic drugs. Central action muscle relaxants

Topic 11. Nitrous oxide

Topic 12. Nonsteroidal anti-inflammatory drugs (NAIDs). Other analgesics

Topic 14. General features of anti-infective chemotherapy
Topic 15. Beta-lactam antibiotics
Topic 16. Macrolide antibiotics. Clindamycin
Topic 17. Nitroimidazoles
Topic 18. Tetracycline
Topic 19. Other antibacterial pharmacological groups
Topic 20. Antifungal drugs
Topic 21. Antiviral drugs
Topic 22. Antiseptics. Fluorides

Block III

Topic 23. Opiate analgesics
Topic 24. Antidepressant drugs Antipsychotic drugs
Topic 25. Antiparkinsonian and antiepileptic drugs. General anesthetic
Topic 26. Pharmacology of the cardiovascular system I
Topic 27. Pharmacology of the cardiovascular system II
Topic 28. Pharmacology of the respiratory tract
Topic 29. Antihistamine H drugs_1
Topic 30. Pharmacology of the digestive tract
Topic 31. Hormonal pharmacology I
Topic 32. Hormonal pharmacology II
Topic 33. Antineoplastic drugs. Immunostimulant and immunosuppressive drugs

4.2. Practical content

The practical content in the subject is spread over 10 practical sessions in the classroom, 1 computer practical session and 7 seminars

2. Assessment

Ordinary call

The assessment system is mixed:

Written theoretical assessment
Instrument: final written exam combining 2-3 multiple choice questions, 1-2 problems, 2-3 clinical cases and 10-12 questions with short answers. Assessment criteria: information provided, reasoning, ability to summarize and precision in the use of language. Each of the three blocks in the subject must be passed. Percentage of the final grade: 70%

Practical assessment

Instrument: final practical work report (classroom and computer) and active participation in classroom practical work sessions. Assessment criteria: identification of the objectives proposed, information contained, ability to analyze and solve the issues presented correctly. Percentage of the final grade: 15%

Continuous assessment of face-to-face activities and independent work

Instrument: participation in seminars and 3 mid-course assessments (30-35 multiple-choice questions, 5 possible answers and just one right) Assessment criteria: adaptation of the content, information provided, reasoning and ability to communicate the information (assessment templates designed for the purpose will be used). Results of the mid-course assessments. Percentage of the final grade: 15%

Extraordinary call

The extraordinary call is governed by the same criteria as the ordinary call. Students may request that the grade they achieve in the practical work assessment and the continuous assessment of face-to-face activities and independent work should be maintained.
**COURSE GUIDE 2021/22**

<table>
<thead>
<tr>
<th>Faculty</th>
<th>327 - Faculty of Medicine and Nursing</th>
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</thead>
<tbody>
<tr>
<td>Degree</td>
<td>GMEDIC30 - Bachelor’s Degree in Medicine</td>
</tr>
<tr>
<td>Cycle</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Year</td>
<td>Third year</td>
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**COURSE DESCRIPTION**

The subject "Clinical Microbiology and Infection" sets out to give an overall vision of infectious diseases from the etiological point of view. The etiology and the pathogenicity mechanisms of the main infectious processes, the correct steps and clinical samples to make a laboratory diagnosis, and an analysis of the microbiological factors that determine antibacterial treatments. The main aim is to acquire the necessary knowledge to establish a strategy and a diagnostic opinion on microbial diseases, indicate a safe and efficient course of treatment and propose the most suitable preventive measures.

**COMPETENCIES/LEARNING RESULTS FOR THE SUBJECT**


COMPETENCIAS DE ESTE MÓDULO QUE SE DESARROLLAN EN ESTA ASIGNATURA (Copia exacta de las competencias de la Orden ECI/332/2008)

Conocer los principales agentes infecciosos y sus mecanismos de acción.
Reconocer, diagnosticar y orientar el manejo de las principales patologías infecciosas en los distintos órganos y aparatos.
Enfermedades de transmisión sexual.
Reconocer, diagnosticar y orientar el manejo de las principales patologías del sistema inmune.

Las competencias específicas y concretas de esta asignatura están detalladas en el apartado de DESCRIPCIÓN DEL CONTENIDO del módulo 3 (véase en este apartado los RESULTADOS DE APRENDIZAJE de esta materia en el módulo 3).

COORDINACIÓN HORIZONTAL Y VERTICAL Los mecanismos de coordinación entre asignaturas del mismo o distinto módulo/curso se detallan en los apartados de <<descripción del contenido>> del módulo 3 y en el epígrafe <<Explicación general>> de <<Planificación de la enseñanza>>

**CONTENIDOS TEÓRICO-PRÁCTICOS**

Master classes

I. INFECTION AND IMMUNE RESPONSE
Infection and infectious disease
Immune response to an infection
Vaccination and anti-infectious immunotherapy

II. DIAGNOSIS AND TREATMENT OF INFECTIONS
Microbiological basis for a diagnosis of infections
Criteria for the rational use of antibiotics

III. ETIOPATHOGENICS, DIAGNOSIS AND ANTIMICROBIAL TREATMENT OF INFECTIONS
Respiratory infections
Urinary tract infections
Cutaneous, subcutaneous, osteoarticular and muscular infections
Central nervous system infections
Sexually transmitted infections
Obstetric, congenital and perinatal infections
Bacteremia
Infections in an immunocompromised patient. Infections related to healthcare
Digestive tract infections
Zoonosis

IV. NEW INFECTIOUS CHALLENGES
The major infectious threats. Emerging infections
Infections in a globalized world. HIV, Plasmodium and Mycobacterium
Travelers' infections
Old and new challenges of resistance to antibiotics
Evaluation tools and percentages of final mark

• Seminars
Emerging/re-emerging pathogens (1) Dengue virus, (2) Leptospira spp; (3) Crimean Congo virus; (4) Yellow fever, (5) Ebola virus infection and (6) Hantavirus

• Classroom practices

• Laboratory practical work
Indication and interpretation of complementary diagnosis studies on infections. Taking and processing of clinical samples for microbiological study. Evaluation, monitoring and follow-up of antibiotic therapy. Immunodiagnostics

*Clinical Laboratory work
Clinical Microbiology Laboratory simulation

TEACHING METHODS
The methodology will include Master Classes (28 classroom hours) in the form of an exhibition class, Seminars (3 classroom hours) with completion and presentation of work on a selection of several emerging and reemerging pathogens and the diseases they cause, 12 hours of Classroom Practices where learning based on the resolution of problems and clinical cases, 20 hours of Laboratory Practices and 3 hours of Practical Class in simulated Clinical Laboratory where the student will come into contact with both the bases of the laboratory microbiological diagnosis and the reality of a clinical microbiology service.

TYPES OF TEACHING

<table>
<thead>
<tr>
<th>Types of teaching</th>
<th>M</th>
<th>S</th>
<th>GA</th>
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<th>TA</th>
<th>TI</th>
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<tr>
<td>Horas de Actividad No Presencial del Alumno/a</td>
<td>50</td>
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</table>

Legend: M: Lecture-based  S: Seminar GA: Applied classroom-based groups
TA: Workshop TI: Industrial workshop GCA: Applied fieldwork groups

Evaluation methods
- End of course evaluation

Evaluation tools and percentages of final mark
- Multiple choice test 75%
- Exercises, cases or problem sets 15%
- Teamwork assignments (problem solving, Project design) 10%

ORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

1. Theoretical assessment: exam of 60 multiple-choice with one correct answer. Each correct answer = 1 point, and each wrong answer means that 0.3 points will be subtracted. Unanswered questions will not be penalized. Of the 60 questions, 48 are related to the subject taught in lectures, and they may include notions worked on in practical laboratory sessions. Twelve questions will be about clinical problems worked on and solved in the practical classroom sessions. This exam must be passed to pass the subject as a whole. The marks of the other assessments will not be added if this part of the assessment is no passed.

2. Practical assessment: questions based on images or tests with an overall weight of 15 points. For each incorrect answer one point is subtracted. This mark will be added to the total grade (only if the test is passed). Attendance is compulsory, and this percentage will not be added to the final mark if the student's absence is not sufficiently justified.

3. Furthermore, attendance, active participation, and the presentation and level of correctness of projects all contribute to the final mark. Practical classroom work accounts for 40% of this section, clinical laboratory practical work 20% and seminars 40%. Presentations (posters or oral) of both kinds of activity will be graded with a maximum 10 points to calculate the overall grade.

Attendance at all programmed activities is compulsory. A lack of active participation of non-compliance of rules will be penalized by subtracting 0.5 points per day of practical work.

If the student does not show up for assessments this will be considered as a withdrawal from the call and will appear as "Not presented".

Students may be assessed under the final assessment (exam) system, regardless of whether they have participated in the
continuous assessment system or not. To do this, they should apply in writing to withdraw from continuous assessment within 9 weeks of the start of the term. In this case, they must sit a multiple-choice exam (only one answer correct) and a practical exam.

**EXTRAORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT**

The extraordinary call is governed by the same criteria as the ordinary call. Students can request that they keep the grade obtained in the practical assessment or take a new exam, while maintaining the score obtained in the rest of the activities with continuous assessment.

If the student does not show up for the evaluations, it will be considered that he renounces the call and will appear as “Not submitted”

**MANDATORY MATERIALS**

Lab coat for laboratory practices and clinical practices. Sheets with practical procedures.

**BIBLIOGRAFÍA**

**Basic bibliography**

**Detailed bibliography**

**Journals**
1. Enfermedades Infecciosas y Microbiología Clínica
2. Revista Española de Quimioterapia
3. Revista Iberoamericana de Micología
4. Medicina Clínica

**Web sites of interest**
4. ProAntibióticos: https://proantibioticos.com/about/
6. Organización Mundial de la Salud http://www.who.int/es/

**OBSERVATIONS**

Due to pandemia, the Master Classes sessions will be on line through BlackBoard Collaborate. The rest of the activities will be presental.
Medical practice is increasingly oriented towards personalized medicine, where the genetic characteristics of every patient are key. Therefore, a solid knowledge of Genetics is essential for the future professionals of Medicine. The subject of Medical Genetics aims to increase the student's understanding of how genes contribute to human physiology and pathology.

In this subject, we deal with the mechanisms that contribute to the development of diseases directly caused by genetic alterations (monogenic or chromosomal), as well as the mode of transmission of these diseases. Other more complex diseases, such as cancer, in which Genetics plays a relevant role, are also studied.

During the course, reference is made to the different medical specialities where the knowledge of Genetics is applied. In particular, the genetic aspects of several clinical cases of diseases related to different specialties are discussed.

Genetics can facilitate the integration of knowledge from different areas, and thus, the subject of Medical Genetics is directly related to other subjects of the Degree in Medicine. For example, 3rd year students should have acquired (in 1st and 2nd year subjects, such as Cell Biology, Genetics, and Biochemistry) a basic knowledge of the models of inheritance and transmission of characters, the structure and function of genes, or the regulation of gene expression, which will be reinforced, expanded and contextualized by studying the subject of Medical Genetics. On the other hand, Medical Genetics is related to other 3rd year subjects, such as Pharmacology (through Pharmacogenetics), as well as to subjects of later years, such as Pathology and Pediatrics (genetic basis of many human pathologies, many of which affect children).

Relationship between the subject of Medical Genetics and professional practice: By observing the total disease burden in the population, an increase in the proportion of genetic diseases can be noted. This is due, on one hand, to our increasing knowledge on the genetic basis of many diseases and, on the other hand, to the fact that the advances in Medicine during the last century have reduced the impact of other types of pathologies.

In addition, technological advances make possible an accurate diagnosis of many diseases based on DNA analysis, and it is expected that gene therapy or replacement of defective genetic material will be a reality in the coming years.

At a time when prevention is one of the primary objectives of current medical practice, Genetics is an indispensable tool to better understand the basis of the pathological process, and therefore to devise useful prevention strategies. Furthermore, personalized medicine seeks to find the best treatment for each patient and, to this end, it is necessary to take into account the individual characteristics of each person, including the genes involved in their disease. The doctor of the future will work in this complex scenario, where Genetics and Genomics will be of paramount importance. The subject of Medical Genetics provides the fundamental tools to the students, so that they can deepen in the diseases specific to each of the professional specialties of Medicine.

### COMPETENCIES/LEARNING RESULTS FOR THE SUBJECT

#### COMPETENCIES (MODULE)
- To draw and interpret pedigrees; to calculate the risk of recurrence and to recognize human phenotypical features: to understand the structure and regulation of the human genome; to understand the molecular basis of human genetic diseases, as well as the origin and consequences of chromosomal alterations; to set up the experimental approaches required for the analysis or genetic diagnosis of a pathology; to know how to use the tools for the analysis of human genetic variability

#### COMPETENCIES (TRANSVERSAL)
- CT1. Instrumental. Analysis and synthesis capability; organization and planning capability; oral communication; problem solving.
- CT2. Personal. Self learning. Use of databases with information relevant in the field of Medical Genetics.

#### LEARNING OUTCOMES (LO)
- LO1. To adequately solve complex problems related to the inheritance of diseases as represented in pedigrees.
- LO2. To establish the relationships between human genome alterations and human pathologies, in order to use such alterations as markers for diagnosis, prognosis and targeted treatment.
- LO3. To select, in a well-argued manner, the cytogenetic or molecular techniques best suited for the diagnosis of different genetic pathologies.
- LO4. To explain the features and consequences of a genetic disease, in a manner that is both correct and understandable for either health professionals or patients.
CONTENIDOS TEÓRICO-PRÁCTICOS

Topic 1: Medical Genetics in the context of health: medical dimension of the advances in Human Genetics.
Theoretical-practical content:
Genetics as an integrative element in the training of a physician. The importance of genetics in the medical profession.
The effects of Genetics on human health at different stages of life. Relationship of Genetics with other Medical specialties.
Genetics in personalized medicine. New genetic technologies in clinical practice.

Topic 2: Use of molecular tools and techniques in the clinical diagnosis of genetic diseases.
Theoretical-practical content:
Informatics tools for use in Medical Genetics. Obtaining genomic information. Genomic browsers (Ensembl) and databases (OMIM, GeneReviews, Genetic Testing Registry).
Techniques for the analysis of gene expression at the level of RNA (RT-PCR, expression microarrays) and protein (immunoblot, immunohistochemistry).

Theoretical -practical content:
General organization of the human nuclear and mitochondrial genome.
Genes: structure, expression and regulation. Protein-coding genes and non-coding RNA. Repetitive DNA. Alu Sequences, microsatellites.
Epigenetics: Histone modifications and DNA methylation. Methods to study DNA methylation. Importance of the family history in medicine. The pedigree as a fundamental tool for the study of family history. Inheritance patterns of monogenic diseases. Rules, tools and procedures to calculate the risk of recurrence. Limitations and problems.

Models of molecular alterations that cause disease. Genotype-phenotype correlation
Theoretical-practical content:
Specific nomenclature in Molecular pathology and Cytogenetics.

Topic 5: Applications of Genetics in Clinical Practice: Genetic counselling. Fundamentals and applications of Pharmacogenetics and Gene Therapy.
Theoretical-practical content:
Criteria for requesting a genetic test, interpretation of results and communication to the patient. The process of Genetic counselling.
Pharmacogenetics: genetic variability and drug metabolism.
Gene therapy. History, objectives and challenges. Methodological basis: vectors and procedures in vivo or ex vivo. Achievements and problems

TEACHING METHODS

Topic 1: Medical Genetics in the context of health: medical dimension of the advances in Human Genetics.
Methodology and teaching modalities:
Master class (Lecture). (1 hour)
Conferences by professionals of Genetics in the health field. (2h)

Topic 2: Use of molecular tools and techniques in the clinical diagnosis of genetic diseases.
Methodology and teaching modalities:
Master classes (Lectures). (6h)
Laboratory Practice: DNA extraction and PCR amplification. (4h)
Computer Practices: Practical exercise: design of PCR primers. (4h)
Genomic databases: genes and diseases (4h)
Classroom Practices (Problem solving): Diagnosis by Molecular Techniques (6h)
Problem-based learning: Seminars: (1h) Management of a family with a genetic disease - i) search for information

Methodology and teaching modalities:
Master Class (Lecture). (1 hour)
Classroom Practices (Problem solving): Pedigree Analysis and Disease Inheritance (6h)
Problem-based learning: Seminars: (1h)
Management of a family with a genetic disease - ii) pedigree analysis and risk calculation

Models of molecular alterations that cause disease. Genotype-phenotype correlation
Methodology and teaching modalities:
Master Classes (Lectures). (6h)
Classroom practices: Use of nomenclature (2h)
Guided discussion of clinical cases (2h)
Classroom practices (Problem solving): Results of molecular and cytogenetic techniques (6h)
Laboratory practice: Preparation and observation of human karyotype. (4h)
Problem-based learning: Seminars: (1h)
Management of a family with a genetic disease - iii) relationship between the genetic alteration and the clinical consequences

Topic 5: Applications of Genetics in Clinical Practice: Genetic counselling. Fundamentals and applications of Pharmacogenetics and Gene Therapy.
Methodology and teaching modalities:
Master Classes (Lectures). (6h)
Classroom Practice: Ethics and Genetics -Reading and discussion of articles (2h)
Preparation and presentation of seminars
Problem-based learning: Seminars: (2h)
Management of a family with a genetic disease - iv) presentation of the case to the group and communication to the family (therapeutic options and genetic counseling)

<table>
<thead>
<tr>
<th>Types of teaching</th>
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<th>S</th>
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Legend:
M: Lecture-based  S: Seminar  GA: Applied classroom-based groups
TA: Workshop  TI: Industrial workshop  GCA: Applied fieldwork groups

Evaluation methods
- Continuous evaluation
- End-of-course evaluation

Evaluation tools and percentages of final mark
- Written test, open questions  45%
- Exercises, cases or problem sets  15%
- Teamwork assignments (problem solving, Project design)  30%
- Oral presentation of assigned tasks, Reading  10%

ORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT
It is mandatory to perform all the tests, and obtain a mark of at least 50% in each one of them.

1. Theoretical evaluation (written test)
Criteria: The student correctly answers theoretical questions and adequately solves practical problems(pedigree analysis, interpretation of genetic techniques and chromosomal analyses). He/she properly uses professional terminology (including nomenclatures for mutations and chromosomal alterations).
Tools: written test: Three theory questions and two problems / practical exercises.

2. Practical evaluation (Realization of practices - exercises, cases or problems)
Criteria: The student correctly performs laboratory practices, properly manages experimental equipment and materials, and is capable of interpreting the results. He/she is able to extract relevant information using computer tools and Genetics databases.

3. Continual assessment (teamwork, problem solving and project design, presentation of works, paper discussion...)
Criteria: The student attends to classes and participates actively. He/she works autonomously, and addresses the
problems raised in previous classes. He/she makes contributions to during teamwork exercises (seminars and group exercises). He/she asks questions and makes interesting comments in the classroom. He/she collaborates in the learning of his/her classmates.

The seminar presentation (both preliminary rehearsals and the final presentation) contains all the relevant information and it is presented in a correct and interesting manner. The slides are well designed. In his/her presentation, the student integrates and contextualizes correctly the concepts explained in the theoretical sessions, and he/she respond correctly to questions posed by the teacher or his/her classmates. The student uses the terminology appropriate to each situation (colleagues and patients).

Tools: Observation of the student's attitude in the classroom and the dynamics of work during the preparation of the seminar and in tutorial sessions. Deliverables: seminar summaries, solved exercises and problems raised in class to evaluate autonomous work.

Tutorial sessions (at least 3), report and public presentation (10 min) of a seminar on a genetic disease prepared during the course.

Students who wish to be evaluated through a final evaluation system must communicate their renounce to continual assessment by writing to the lecturer responsible for the subject. This communication should be made within 9 weeks after the beginning of the semester, in accordance with the official calendar of the Center.

The final evaluation will consist on a written test in which all the learning outcomes of the subject will be evaluated.

Not sitting the written test will imply refusing the exam call, and it will be officially recorded as not taken, or "No presentado", for students subject to both continuous or final evaluation.

During the evaluation tests, the use of books, notes, as well as telephones, electronic equipment, computers or other devices is strictly forbidden. Only a calculator is allowed. In case of dishonest or fraudulent practice, the provisions of the protocol on academic ethics and prevention of dishonest or fraudulent practices in the evaluation tests and academic works at the UPV/EHU will be applied.

In the event that the health situation would make it impossible to sit the final evaluation test in person, appropriate measures will be taken to carry out an appropriate evaluation of the knowledge acquired by the students using the online systems provided by the UPV/EHU and the Center.

EXTRAORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

The extraordinary examination call will be carried out through a final evaluation system. It will consist on a written test in which all the learning outcomes of the subject will be evaluated. The mark in the test will determine 100% of the final mark.

During the evaluation tests, the use of books, notes, as well as telephones, electronic equipment, computers or other devices is strictly forbidden. Only a calculator is allowed. In case of dishonest or fraudulent practice, the provisions of the protocol on academic ethics and prevention of dishonest or fraudulent practices in the evaluation tests and academic works at the UPV/EHU will be applied.

Not sitting the written test will imply refusing the exam call, and it will be officially recorded as not taken, or "No presentado", for students subject to both continuous or final evaluation.

In the event that the health situation would make it impossible to sit the final evaluation test in person, appropriate measures will be taken to carry out an appropriate evaluation of the knowledge acquired by the students using the online systems provided by the UPV/EHU and the Center.

MANDATORY MATERIALS

BIBLIOGRAFÍA

Basic bibliography

Detailed bibliography
Journals
- Nature Reviews in Genetics
- Current Opinión in Genetics

Web sites of interest
- Specific for cytogenetics and chromosomal abnormalities: http://www.slh.wisc.edu/cytogenetics/index.php

OBSERVATIONS
1. **Description**

The main objective of the subject is that the students should acquire the scientific basis to promote individual and collective health through the treatment of the most common illness in our setting.

It is necessary to have passed “Basis of Medical Pharmacology” to take the subject.

2. **Learning outcomes**

The specific learning outcomes of the subject are:

- RA1. Evaluate when the patient needs drug treatment and select the most suitable from those available, weighing up the therapeutic value against the toxicity risk.
- RA2. Be able to find the right information to solve a drug therapy problem, as well as critically analyze the bibliography of the sector and apply bioethical principles to drug research.
- RA3. Use and prescribe drugs correctly in the most common illnesses.
- RA4. Learn about Pharmacovigilance and how to fill in a notification of adverse reaction and collaborate with or receive information from the National Pharmacovigilance System.
- RA5. Teamwork

3. **Content**

**Theoretical Content: Lectures**

**General Applied Pharmacology**

- **T0. Introduction**
- **T1. Principles of Clinical Pharmacology.**
- **T2. Reasoned pharmacotherapy, prescription and regulation.**
- **T3. Applied pharmacokinetics and pharmacodynamics.**
- **T4-5. Studies on the use of medication**
- **T6. Safety of medication.**

**Special groups**

- **T7. Principles of the use of drugs during pregnancy and the pediatric age.**
- **T8. Principles of the use of drugs in older people.**
- **T9. Principles of the use of drugs in liver and kidney failure.**
Reasoned prescription in illnesses

T10. Basic principles for the prescription of antibiotics.

T11. Selection and use of antibiotics in highly prevalent infections.

T12. Selection and use of drugs in respiratory illnesses.

T13. Selection and use of drugs in digestive illnesses.

T14. Selection and use of hormonal contraceptive therapy.


T16. Selection and use of drugs in inflammatory illnesses and headaches.


T25-26. Selection and use of drugs in neurological illnesses I: Parkinson's, Alzheimer's, Epilepsy and Headaches.

Practical content:

Practical work in the classroom

PA1. Prescriptions issued in a reasoned way

PA2. Critical reading

PA3. Adverse reactions and Pharmacovigilance

PA4. Criticisms of advertising

Practical computer work

PO1. Sources of information on medication

Seminars

S1. Ethics of research

S2. Pharmacoepidemiology and Pharmacoeconomics.

S3. Placebo effect

S4. Biological medication

S5-S6. Applied clinical cases

Assessment
The assessment of the subject will be continuous, as described below:

1. Final exam (70% of the final grade). It will consist of 25-30 multiple-choice questions and 3-4 questions to be answered in writing. To pass this part, the student must score at least 4 (out of 10) in each part.
2. Attendance (4% of the final grade).
3. Individual and group practical activities (26% of the final grade). To pass the subject, this part must be passed too.

If a student wishes, he/she may be assessed through the final assessment system (final exam). This must be requested within 9 weeks of starting the term. The theoretical content will be assessed (70% of the grade, written exam) and practical content (30% of the grade, oral exam). Both parts must be passed separately.

Non-attendance at the final exam will mean automatic withdrawal from the call.

The extraordinary call will consist of a single final exam similar to that of the ordinary call.
SUMMARY OF THE STUDENT'S GUIDE

PHARMACOLOGY IN PHYSIOTHERAPY
1. Data on the subject

<table>
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<tr>
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<th>Faculty of Medicine and Nursing</th>
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<tr>
<td>Qualification</td>
<td>Undergraduate Degree in Physiotherapy</td>
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<tr>
<td>Department</td>
<td>Pharmacology</td>
</tr>
<tr>
<td>Subject</td>
<td>Pharmacology in Physiotherapy</td>
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<tr>
<td>ECTS credits</td>
<td>6</td>
</tr>
<tr>
<td>Module</td>
<td>M01: “Therapeutic Procedures with Drugs”</td>
</tr>
<tr>
<td>Academic Year</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Second</td>
</tr>
<tr>
<td>Group</td>
<td>01/31</td>
</tr>
<tr>
<td>Term</td>
<td>Second</td>
</tr>
<tr>
<td>Language</td>
<td>Spanish/Basque</td>
</tr>
<tr>
<td>Nature</td>
<td>Basic of OTHER branches</td>
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</tbody>
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Prof. María Torrecilla (Coordinator)
e-mail maría.torrecilla@ehu.eus
Tutorial consult GAUR

2. Competencies in the Subject

The general competencies worked on in the subject, in line with the study program approved by the Ministry of Education, are (order CIN2135/2008):

G003. Learn and understand the methods, procedures and actions of physiotherapy, aimed both at the therapy to be applied in clinical practice for functional re-education or recovery and for the performance of activities to promote and maintain health.

G012. Intervene in the areas of promotion, prevention, protection and recovery of health.

G017. Understanding the importance of updating the knowledge, skills and attitudes that make up the professional skills of a physiotherapist.

The learning outcomes to be achieved by the students are:

RA1. Understanding the basics of pharmacokinetics and pharmacodynamics and the factors that intervene in drug responses.

RA2. Identify the basic aspects of drugs that act on the vegetative and neuromuscular nervous system, other systems and tracts, and of chemotherapy drugs. Differentiate the main routes of drug administration through the skin and drugs for topical application in physiotherapy and sports medicine.

RA3. Evaluate the effect of drug therapy in the effectiveness of the physical and physiotherapeutic treatments and the possible effects of the pharmacological agents in the prevention of increase of risk of lesions.

RA4. Analyze the influence of certain rehabilitation procedures on the effects of drugs.

RA5. Defend the importance of therapy with drugs being safe and effective, contributing to the correct use of medication in relation to patients, families and the community in general.
<table>
<thead>
<tr>
<th>Syllabus Theoretical (CM)</th>
<th>Part I: General concepts and mechanisms involved in the action of drugs and the processes of absorption, distribution, metabolism and excretion associated with them.</th>
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<tbody>
<tr>
<td></td>
<td>Part II. Pharmacology of the vegetative and peripheral nervous system</td>
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<td>Part III. Pharmacology of systems and tracts</td>
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<td></td>
<td>B.- Other tracts and systems</td>
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<td></td>
<td>C.- Hormones. Vitamins</td>
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<td>D.- Chemotherapy</td>
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<thead>
<tr>
<th>Practical activities</th>
<th>SEMINARS (S)</th>
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<tr>
<td></td>
<td>(S1) Pharmacokinetics - the effect of physical activity on pharmacokinetics.</td>
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<tr>
<td></td>
<td>(S2) Doping in sport and the abuse of medication and drugs.</td>
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<table>
<thead>
<tr>
<th>PRACTICAL CLASSROOM WORK (PA)</th>
<th>(PA1 &amp; 3) Pharmacological targets and pharmacodynamic parameters.</th>
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<tbody>
<tr>
<td></td>
<td>(PA2) Pharmacokinetics - the effect of physical activity on pharmacokinetics.</td>
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<td>(PA4) Non-steroid anti-inflammatory drugs. Topical application of drugs.</td>
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<td>(PA5) CNS pharmacology.</td>
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<td>(PA6) Pharmacological treatment of asthma.</td>
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<td>(PA7) Cardiovascular and blood pharmacology.</td>
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<td>(PA8) Problem-solving in interactions between drugs and other physiotherapy treatments.</td>
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<td>(PA9) Antibiotics and antiviral drugs.</td>
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<tr>
<th>LABORATORY PRACTICAL WORK (PL)</th>
<th>(PL1) Elimination of salicylates.</th>
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<tbody>
<tr>
<td></td>
<td>(PL2) Pharmacology of pain.</td>
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<tr>
<td></td>
<td>(PL3) Pharmacology of motor disorders - Parkinson's disease.</td>
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<tr>
<td></td>
<td>(PL4) Pharmacology of diabetes: simulation of blood sugar regulation through the administration of insulin and adjusting carbohydrate intake.</td>
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<thead>
<tr>
<th>COMPUTER PRACTICAL WORK</th>
<th>Attendance is compulsory.</th>
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<tbody>
<tr>
<td></td>
<td>- (PO1). Sources of information and learning in Pharmacology: handling pharmacopoeia, Forms and Catalogues of specialties.</td>
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</tbody>
</table>
Continuous assessment system.
The continuous assessment system consists of a final written exam and tasks performed by the student that are assessed during the practical classroom sessions with computers, laboratory work and seminars, as well as during non-face-to-face hours of the subject.