

**COURSE DATA****Data Subject**

<b>Code</b>	33965
<b>Name</b>	Pharmacology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2021 - 2022

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. Period</b>	<b>year</b>
1205 - Degree in Human Nutrition and Dietetics	Faculty of Pharmacy and Food Sciences	4	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1205 - Degree in Human Nutrition and Dietetics	24 - Pharmacology	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
MAÑEZ ALIÑO, SALVADOR	135 - Pharmacology
NOGUERA ROMERO, MARIA ANTONIA	135 - Pharmacology

**SUMMARY**

Pharmacology is an important subject in the training of future graduates in Human Nutrition and Dietetics. Pharmacology is the science that studies the actions and properties of drugs in live organisms, understanding the term “drug” as any chemical used in the treatment, prevention or diagnosis of a disease, or to avoid the appearance of an unwanted physiological process.

The contents of the subject Pharmacology in the Degree in Human Nutrition and Dietetics gather general aspects of pharmacokinetics, pharmacodynamics and pharmacotherapy. In addition, the general principles of drug action are established for better understanding how the drugs work according to the organs and physiological systems in which they operate. We further learn the fundamental aspects for the future nutritionist: The main groups used in diseases that require adequate dietary advice for control, and pharmacological groups that can influence the nutritional status. We also study the influence of nutritional status in drug response and potential drug-food interactions.



In the current curriculum this subject is in the fourth year of the Bachelor's Degree and has 4.5 credits It is placed in the first semester of the academic year and is mandatory.

The credits are distributed as follow: 35h devoted to theoretical classes (four days a week), 3 hours of practical classes in the computer classroom (in one session), 2 hours of seminars, 2 hours of group tutorials and 2 hours for the theoretical exam.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

There is no administrative restriction concerning other academic subjects, Nevertheless, in order to reach a proper learning and achieve the competencies derived from the subject of Pharmacology, students should have acquired knowledge of Physiology and Biochemistry, which are necessary to understand the actions of drugs and their therapeutic effects.

## OUTCOMES

### 1205 - Degree in Human Nutrition and Dietetics

- Capacidad para localizar y sintetizar la información y realizar una exposición oral con el empleo de las TIC.
- Capacidad para analizar problemas y resolverlos con espíritu crítico colaborando con otros profesionales sanitarios en el consejo al paciente medicalizado.
- Saber realizar búsquedas bibliográficas en bases de datos de medicamentos comprendiendo la terminología científica.
- Learn basic concepts of pharmacology (pharmacokinetic and pharmacodynamic aspects).
- Know the pharmacological action of the therapeutic groups and relate them to their effects, indications and adverse reactions.
- Determine the influence of the nutritional status on the pharmacological response, drug-food interactions and their clinical significance.

## LEARNING OUTCOMES

- Knowledge of the physico-chemical characteristics of the drugs and understanding how the human organism alters them.



- Knowledge and understanding of general principles of the mechanism of action of drugs, basis of drug interactions and adverse reactions.
- Express themselves with rigor and pharmacological terminology and adequately addressing both the patient and other healthcare professionals.

Acquisition of skills in search of information about drugs, and critically evaluate this information in order to provide objective and contrasted information to both healthcare professionals and patients, with the use of new communication technologies.

## DESCRIPTION OF CONTENTS

### 1. GENERAL PHARMACOLOGY

Basic Concepts in Pharmacology, general principles of Pharmacokinetics and several aspects of molecular pharmacology (mechanism of action of drugs). Drug interactions and types of adverse reactions.

UNIT 1 .-Introduction. Concepts. Development and evaluation of new drugs.

UNIT 2 .-Mechanisms of action of drugs. Drug-receptor interactions.

UNIT 3.- General principles of pharmacokinetics. LADME process. Drug absorption.

UNIT 4.- Distribution of drugs.

UNIT 5 .-Elimination of drugs. Metabolism.

UNIT 6 .-Excretion. Forms and routes of excretion.

UNIT 7 .-Pharmacokinetic parameters. Patterns of drug administration.

UNIT 8 .-Drug interactions and variations in drug response. Factors dependent on the drug and the patient.

UNIT 9 .-Adverse drug reactions. Pharmacovigilance.

### 2. SPECIAL PHARMACOLOGY

It addresses the pharmacological groups used in different diseases including: mechanism of action, pharmacological effects, pharmacokinetics, adverse reactions and therapeutic applications. Preferentially developing those drugs used in diseases requiring dietary intervention.

UNIT 10 .-Pharmacology of gastric, hepatobiliary and exocrine pancreatic secretion.

UNIT 11 .-Pharmacology of gastrointestinal motility and vomiting.

UNIT 12 .-Drugs affecting intestinal transit: laxatives and antidiarrheics.

Treatment of inflammatory bowel disease.

UNIT 13.- Treatment of obesity. Appetite stimulant medications.

UNIT 14 .-Lipid-lowering drugs.

UNIT 15.-Antidepressants and anxiolytics.

UNIT 16 .-Psychostimulants and addictions.

UNIT 17.-Respiratory pharmacology.

UNIT 18.-Analgesic and antiinflammatory drugs.



UNIT 19.-Drugs used in the treatment of gout and hyperuricemia.

UNIT 20.-Antihypertensive drugs

UNIT 21.-Anticoagulants and other drugs used in blood disorders.

UNIT 22.- Antidiabetic drugs.

UNIT23 .-Pharmacology of thyroid disorders and other hormonal therapies.

UNIT24 .-Pharmacology of osteoporosis and bone metabolism disorders.

UNIT 25.-Patterns of anti-infective therapy. Antimicrobial drugs.

### 3. INTERACTIONS DRUGS - FOOD

Details of the influence of drugs on the process of nutrition, and the interference of food, diet or nutritional status on drug response. In certain circumstances, these interactions may even cause therapeutic failure or nutritional deficiencies.

UNIT 26 .- Influence of drugs on patients nutrition.

UNIT 27 .- Influence of food and nutritional status in drug response.

### WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	35,00	100
Computer classroom practice	3,00	100
Seminars	2,00	100
Tutorials	2,00	100
Attendance at events and external activities	2,00	0
Development of group work	10,00	0
Study and independent work	32,00	0
Readings supplementary material	3,00	0
Preparation of evaluation activities	11,00	0
Preparing lectures	8,00	0
Preparation of practical classes and problem	1,00	0
Resolution of case studies	1,00	0
<b>TOTAL</b>	<b>110,00</b>	

### TEACHING METHODOLOGY

#### Teaching Methodology



\* **Theoretical Lessons.** - Students must acquire basic knowledge covered by the syllabus by attending lectures and personal study. In these lectures, the professor will give an overview of the topic under study with the support of audiovisual systems and active student participation. To facilitate personal study and preparation of the issues in depth, the proper literature and necessary support material will be indicated or provided to students through the Virtual Classroom.

\* **Seminars.**- Seminars allow a more active involvement of students. In seminars, the students, gathered in groups of 4 members, will prepare, exhibit and discuss with his class mates a topic related to the content of Pharmacology. In these seminars students will exercise or acquire the capability to search, outline and summarize information and the ability of oral and written expression, promoting teamwork as well. Coordination of seminars will be performed by the Faculty.

In addition students could be offered to participate in complementary activities of varied type (cinema-forum, debates, press news,...) covering current issues related to the subject, or addressing any particular aspect of the syllabus of difficult comprehension, if required by the students.

\* **Tutorials.**- The tutorials are obligatory, collective and organized into small groups of students, according to the established timetable. In these sessions, the tutor will evaluate the learning process of the students in a global way. The tutor may raise specific issues previously worked by students the students. Besides, the tutorials will serve to advise students on strategies to circumvent difficulties that might encounter.

\* **Computer practical classes.**- They performed in a single session in the computer classroom. The attendance is compulsory. They are prepared to facilitate the student the sources of information relevant to their future profession and to acquire the capability to search in internet issues related with drugs and their interactions among themselves or with food constituents.

**Sustainable Development Goals (SDG).** In the diverse activities along the academic year, to say, theoretical, practical or tutorial ones, the emphasis will be placed on the concrete meaning that the knowledge and skills that pharmacology provides in relationship with the SDG. The same concept will apply for the proposals of topics for the coordinated seminars.

The SDG 2030, on which a Pharmacology course projects its influence, are nº 2 and, above all, nº 3, dedicated to the eradication of the poverty and to the protection of the health. Pharmacology in the context of the Human Nutrition and Dietetics Degree provides a medicinal vision of the nutritional field. This is to say, it explores how to intervene in the treatment of the diseases in a coordinated way with the human feeding. This is, perhaps, not extremely difficult in relationship of metabolic or hormonal disorders, but it is complicated in other situations.

Within the **Goal 2**, Pharmacology will emphasize the drug response of the elder patients, pregnant or lactating women, children and adolescents. Studying the response when it is modified due to malnutrition or dietary imbalance will be necessary.

Within the **Goal 3**, training on antibiotics and other anti-infective drugs -in the broadest sense- will have to be increased to meet the treatment of neglected or under-treated communicable diseases. Likewise, in this case without increasing time, much attention will be paid to the prevention and treatment of drug dependencies, including withdrawal syndromes, where appropriate. Finally, it will be about vaccines and, in this case, throughout the program, the so-called essential drugs, in the field of developing countries.



## EVALUATION

The evaluation will consider:

- Tutorials (5%). Various aspects are taken into account, such as attendance, active participation, and delivering a report.
- Seminars with oral presentation and subsequent discussion (10%). The level of understanding of content and the skills for presentation and discussion will be assessed. It is mandatory to perform a seminar in one of the subjects of the course. Failure to pass the course the year in which the seminar was made, the qualification is saved for the following two years.
- Computer practical classes (5%). It will be assessed by the participation in the activities, resolution of issues raised in situ (30%) and by giving a small peer or individual report to be delivered within a week. Failure to pass the course on the course that has been made, the mark for the next year will be saved.
- Theoretical exam (70%) consists of some essay questions, accompanied, when appropriate, by a multiple-choice test.
- Continuous evaluation (5%): short, periodical, programmed exercises, according to the main sections of the course.
- Attendance to other classroom activities (5%): Seminars, active participation in ordinary classes and other activities.

It is an essential requirement to pass the subject to have passed the theoretical exam.

## REFERENCES

### Basic

- FLÓREZ (editor). *Farmacología humana* 6ª ed. Elsevier Masson, 2014.
- LORENZO, MORENO, LIZASOAÍN, LEZA, MORO y PORTOLÉS. Velázquez. *Manual de Farmacología Básica y Clínica*. 19ª ed. Médica Panamericana, 2012 (disponible a partir de septiembre 2012)
- RANG y DALE. *Farmacología*. 7ª ed. Elsevier, 2012.
- HITNER y NAGLE. *Introducción a la Farmacología*. 5ª ed. McGraw Hill, 2007



- MESTRES y DURAN. Farmacología en Nutrición. 1ª ed. Médica Panamericana, 2011

#### Additional

- DAWSON, TAYLOR y REIDE. Lo esencial en Farmacología. 2ª ed. Elsevier, 2003.
- LÜLLMANN, MOHR y HEIN. Farmacología. Texto y Atlas. 6ª ed. Medica Panamericana, 2010.
- MONTORO y SALGADO. Interacciones fármacos-alimentos. 1º ed. Novartis. Rubes Editorial, S.L., 1999.
- SALAS-SALVADÓ, BONADA, TRALLERO y SALÓ. Nutrición y dietética clínica. 1ª ed. Masson, 2002.

#### ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

#### 2. Temporal planning of teaching activities

Theoretical classroom sessions will run until October 30. Afterwards, such classes will follow by means of videoconference along two weeks. For the other sections appearing in the *Guia Docent* a general maintenance is planned, according to the calendar proposed by the coordinating authorities of both the course and the degree.

#### 3. Teaching modalities

When, according to the guidelines of the Faculty of Pharmacy and those of the Coordinators of the degree, the theoretical classes should be taught on-line, they will be performed by synchronous videoconference with *Blackboard Collaborate* (BBC), with a link for *Aula Virtual* and by means of the delivery of files in pdf format, spoken or annotated. Pharmacology practices, which take place in the computer room, will be face-to-face, as long as the appropriate safety distance can be strictly maintained. This criterion will also be applied to tutorials which are scheduled to take place in the classroom assigned to the group. The lecture of seminars will run by BBC.



#### 4. Evaluation

The mark of the final exam will represent 65%, a value to which a 10% for the contributions of continuous assessment be will added. Such assessment must be prioritized, according to the instructions of the Agreement of June 2, 2020 between the *Conselleria d'Innovació, Universitats, Ciència i Societat Digital i les rectores i rectors valencians* for the start of the 2020-21 academic year. The coordinated seminar will remain at 10%. The rest will be represented by the practices (5%) and by the active participation in on-campus and on-line classes, tutorials, and other activities (10%).

*Note: Content of the so-called continued evaluation*

Students will be offered the delivery of tasks and questionnaires of rigorous personal elaboration, correlative temporarily to the development of large blocks of the syllabus of the matter.

#### 5. Some additional bibliographical sources that can be found on the Internet

Pharmacology Guide, British Pharmacological Society and International Union of Pharmacological Societies

<https://www.guidetopharmacology.org/>

Materials for Pharmacology (I), Universidad de La Laguna

<https://campusvirtual.ull.es/ocw/course/view.php?id=114>

Electronic tool for searching drug and food interactions

<https://www.drugs.com/druginteractions.html>

Drug Information Center, Spanish Health Ministry.

<https://cima.aemps.es/cima/publico/home.html>



Electronic books available at the Servei de Biblioteques i Documentació de la Universitat de València

Rang y Dale Farmacología [Recurs electrònic] / H. P. Rang ... [et al.] Barcelona: Elsevier, 2012  
03/12/2015 E-LIBRARY (ELSEVIER)

[http://trobes.uv.es/record=b2359129~S1\\*val](http://trobes.uv.es/record=b2359129~S1*val)

Vademecum Internacional 14 [Recurs electrònic]: guía farmacológica / [dirección editorial y científica M<sup>a</sup>  
Belén Fernández] Buenos Aires [etc.]: Médica Panamericana, 2014 28/12/2015 PANAMERICANA  
EBOOKS

[http://trobes.uv.es/record=b2482768~S1\\*val](http://trobes.uv.es/record=b2482768~S1*val)

Farmacología humana [Recurs electrònic] / Director Jesús Flórez Madrid: Elsevier, 2016 3/12/2015 E-  
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[http://trobes.uv.es/record=b2475790~S1\\*val](http://trobes.uv.es/record=b2475790~S1*val)