



1. General information

Course: PHARMACOLOGY AND PHARMACOTHERAPY I

Type: CORE COURSE

Degree: 376 - UNDERGRADUATE DEGREE PROGRAMME IN PHARMACY

Center: 14 - FACULTY OF PHARMACY

Year: 4

Main language: Spanish

Use of additional
languages:

Web site:

Code: 14329

ECTS credits: 6

Academic year: 2023-24

Group(s): 10

Duration: First semester

Second language: English

English Friendly: Y

Bilingual: N

Lecturer: VALENTIN CEÑA CALLEJO - Group(s): 10

Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina	CIENCIAS MÉDICAS	2951	valentin.cena@uclm.es	

Lecturer: INMACULADA CONCEPCION POSADAS MAYO - Group(s): 10

Building/Office	Department	Phone number	Email	Office hours
Facultad de Farmacia	CIENCIAS MÉDICAS	2953	inmaculada.posadas@uclm.es	

2. Pre-Requisites

Students must bear in mind that in order to pass this subject they must have previously studied and passed Human Anatomy, Biology and Organic Chemistry I in the first year; Organic Chemistry II, Physical Chemistry I and II, Biochemistry I and II, Immunology and Physiology in the second year, General Pharmacology, Physiopathology and Biopharmacology and Pharmacokinetics in the third year.

3. Justification in the curriculum, relation to other subjects and to the profession

PHARMACOLOGY AND PHARMACOTHERAPY I is one of the subjects that make up Module 5 of the UCLM Degree in Pharmacy Syllabus to be taught during the FIRST four-month period of the 4th year. It is therefore aimed at second cycle students who have already had contact with Basic Sciences in the first cycle. Therefore, students should have already passed the recommended prior knowledge to adequately undertake this subject, knowledge that is achieved in other subjects such as Biology, Human Anatomy, Organic Chemistry, Physical chemistry, Physiology, Biochemistry and Molecular Biology, Immunology, Bio-pharmacy and Pharmacokinetics and General Pharmacology. The notions of these other subjects facilitate the learning process and the acquisition of new knowledge about the properties and mechanism of action of drugs to lay the foundations for rational and effective drug therapy.

Based on the approaches and objectives of the program detailed below, this subject incorporates a wealth of knowledge and in turn provides essential foundations about medicines, on which the correct and rational use of medicines is articulated and supported. A thorough knowledge of the physical, chemical, and biological interactions on the results of therapy makes pharmacists unique among health professionals in understanding the entity of medicines, the release characteristics of formulations, the distribution of active ingredients in different compartments, and the physiological and pharmacological results of their interactions with the biological organism.

The pharmacist is a drug professional who must possess the ability to find, integrate and apply information from pharmaceutical sciences to solve pharmacotherapeutic problems, which will enable him/her to:

- To inform and advise patients on medication as part of their pharmaceutical care work.
- To participate in and develop teaching tasks aimed at training students of the Degree in Pharmacy and other health professionals.
- To participate in research aimed at the development of new drugs and the identification of possible therapeutic targets.

4. Degree competences achieved in this course

Course competences

Code	Description
B01	Proficiency in a second foreign language at level B1 of the Common European Framework of Reference for Languages.
B02	Knowledge of Information and Communication Technologies (ICT).
B03	A correct oral and written communication
B04	Ethical commitment and professional deontology.
B05	Ability to develop those learning skills necessary to undertake further studies.
EM01	Using drugs safely, taking into account their physical properties and the kind of vehicles directly related with their use.
EM04	Study the effects of substances with pharmacological activity.
EM05	Know and understand the techniques used in the design and evaluation of pre-clinical and clinical trials.
EM07	Promote the rational use of medicines and health products.
EM08	Acquire the necessary skills to provide therapeutic advices in pharmacology and dietetics, as well as to give nutritional advice to the users of the establishment where they provide customer service
EM12	Acquire a detailed knowledge about the drugs properties and their mechanism of action
EM22	Interaction of drugs with other drugs or substances. Prevention and treatment.
G01	Identify, design, obtain, analyze, control and produce drugs and medicines, as well as other products and raw materials of sanitary interest for human or veterinary use.

G02	Evaluate the therapeutic and toxic effects of substances with pharmacological activity.
G03	Know how to apply the scientific method and acquire skills in the handling of legislation, sources of information, bibliography, elaboration of protocols and other aspects considered necessary for the design and critical evaluation of preclinical and clinical trials.
G04	Design, prepare, supply and dispense medicines and other products of health interest.
G05	Provide therapeutic advice in pharmacotherapy and dietotherapy, as well as in the nutritional and food field in the establishments where they provide services.
G06	Promote the rational use of medicines and medical devices, as well as to acquire basic knowledge in clinical management, health economics and the efficient use of health resources.
G07	Identify, evaluate and assess problems related to drugs and medicines, as well as participate in pharmacovigilance activities.
G08	Conducting clinical and social pharmacy activities, following the pharmaceutical care cycle.
G09	Intervene in health promotion and disease prevention activities at the individual, family and community levels, with an integral and multi-professional vision of the health-disease process.
G10	Design, apply and evaluate clinical reagents, methods and analytical techniques, knowing the basic principles of clinical analysis and the characteristics and contents of laboratory diagnostic reports.
G11	Evaluate the toxicological effects of substances and design and apply appropriate tests and trials.
G12	Develop hygienic-sanitary analyses, especially those related to food and environment.
G13	Develop communication and information skills, both oral and written, to deal with patients and users of the centre where they carry out their professional activity. Promote the capacity to work and collaborate with multidisciplinary teams and those related to other health professionals.
G14	Know the ethical and deontological principles according to the legislative, regulatory and administrative provisions governing professional practice, understanding the ethical implications of health in a changing social context.
G15	Recognise own limitations and the need to maintain and update professional competence, with particular emphasis on self-learning of new knowledge based on scientific evidence.
T01	Critical thinking skills based on the application of the scientific method
T02	Ability to manage quality scientific information, bibliography, specialized databases and resources accessible through the Internet.
T03	Handling of basic and specific software for the treatment of information and experimental results.
T04	Motivation for quality, safety at work and awareness of environmental issues, with knowledge of the internationally recognised systems for the correct management of these aspects.
T05	Organizational, planning and implementation skills.
T06	Ability to address human resources decision-making and management.
T07	Ability to work as a team and, where appropriate, exercise leadership functions, encouraging entrepreneurship.
T08	Develop interpersonal skills and the ability to function in an international and multicultural context.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Acquire a detailed knowledge for the use of drugs database useful to the search for information on drugs and related topics.

Learning basic pharmacological terminology, and acquire a detailed knowledge about pharmacological targets and pharmacokinetics processes suffered by drugs in the body.

To know the behaviour of the drugs in the body in a specific way for each of the therapeutic groups.

Identify and evaluate the different types of adverse reactions associated with the pharmacological treatments.

Solving and interpretation of experimental data. Learning the right handling of the experimental animal.

Identify the most common types of pharmacological interactions. Learning to visualize and detect new potential interactions.

Identifying the different effects derived from the pharmacological action, differentiating the main effects and the side effects, leading the projection towards the understanding and rationalization of therapeutics.

Promote the rational use of drugs.

6. Units / Contents

Unit 1: Pharmacology of the Autonomic Nervous System

Unit 2: Autacoids

Unit 3: Pharmacology of the inflammatory response

Unit 4: Pharmacology of the respiratory system

Unit 5: Pharmacology of the cardiovascular system

Unit 6: Pharmacology of the Central Nervous System

Unit 7: Laboratory

ADDITIONAL COMMENTS, REMARKS

The unit content will be specify in Moodle

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
		B01 B02 B03 B04 B05					The teaching resources will be accessible on the Moodle platform before the start of the activities. In addition, students will have access to complementary bibliographic material (books, review articles) in the university library of the Albacete campus. The teaching methodology through the combination of methods

Class Attendance (theory) [ON-SITE]	Combination of methods	EM12 EM22 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	1.38	34.5	Y	N	will contemplate the expository method/lecture. The active participation of the student, through cooperative work both in and out of the classroom and in the preparation and defence of workshops, and in the resolution of questions or cases proposed by the teacher throughout the course, or any other activity proposed by the teacher, will be taken into account in the final assessment of the course.
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	B01 B02 B03 B04 B05 EM01 EM04 EM05 EM07 EM08 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15	0.8	20	Y	Y	Practical teaching will be given in small groups within the periods established in the academic calendar and will not coincide with other teaching activities. They will be carried out in laboratories equipped with the appropriate means to achieve the proposed objectives. These activities are MANDATORY and students will not be able to pass the course if they are not carried out properly.
Study and Exam Preparation [OFF-SITE]	Self-study	B01 B02 B03 B04 B05 EM01 EM04 EM05 EM07 EM08 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	3.28	82	Y	N	Students may request personal tutorials on the contents of the course by previously requesting an interview with the teacher.
Formative Assessment [ON-SITE]	Assessment tests	B01 B02 B03 B04 B05 EM01 EM04 EM05 EM07 EM08 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.16	4	Y	Y	Specific dates have been set aside in the academic calendar so that the assessment tests do not coincide with other teaching activities.
Group tutoring sessions [ON-SITE]	Group tutoring sessions	B03 B04 B05 T01 T02 T03	0.06	1.5	Y	N	Group tutorials will be held in which different aspects proposed by both the teacher and the students will be addressed.
On-line debates and forums [OFF-SITE]	Problem solving and exercises	EM01 EM04 EM05 EM07 EM08 EM12 EM22 G02 G03 G06 G07 T01 T02 T03	0.32	8	Y	N	This is a Virtual Learning activity, in which the teacher will provide students in the virtual space Moodle, various questionnaires and problems that will help students to determine their level of knowledge of the subject. students must study the proposed cases, and proceed to their resolution.
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Mid-term tests	70.00%	70.00%	The evaluation of the theoretical block will consist of two non-compulsory partial tests of the theoretical concepts covered in the different teaching activities. The assessment of the practical block will include attendance at the practicals, the attitude in the laboratory, the assessment of a practical questionnaire to be handed in at the end of each of the practicals, and an exam to be taken on the last day of the practicals.
Laboratory sessions	20.00%	20.00%	The laboratory sessions are compulsory activities, so that, the existence of a lack of attendance, without adequate justification, will imply that the student CANNOT pass the subject in the ordinary exam.
Assessment of active participation	10.00%	10.00%	The completion of assignments, presentation of seminars or any other activity proposed by the teacher may account for up to 10% of the grade for the course. This assessment will only be considered in the final mark if 40% of the theoretical-practical contents have been passed.

Total:	100.00%	100.00%	
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According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The ordinary exam will consist of an assessment of the theoretical knowledge acquired (theoretical block), an assessment of the laboratory practicals (practical block) and an assessment of the student's participation and achievement (participation block).
In order to pass the course, students must achieve at least 40% of the contents of the theoretical and practical blocks. The minimum grade required in all the evaluable activities of the theoretical and practical blocks will be 4.0.
The course will be considered passed when the weighted sum of the different blocks (theoretical, practical and participation) is equal to or higher than 5.0.
The theoretical block, corresponding to 70% of the total grade of the course, can be passed by means of two partial tests, which are not compulsory and can be made up. Each of them will correspond to 50% of the grade of the theoretical block. The minimum mark required to obtain the weighted average between the two tests will be 4.0.
The student who does not reach 40% of the theoretical content in the first partial test will not eliminate matter, and must reach 40% of the total content in the final test. The student who does not reach 40% of the theoretical contents in the second partial test will not be able to do media with the mark of the first partial test, even if it is higher than 4.0.
The qualification of the practical block, corresponding to 20% of the total qualification of the subject, will be determined taking into account the attendance, participation, and evaluation of the questionnaire and examination of the practical contents. The student who does not reach 40% of the content in the different evaluable activities will not be able to do media with the rest of the evaluable blocks.
The qualification of the participation block, corresponding to 10% of the total qualification of the subject, will be determined by evaluating the different activities proposed by the professor throughout the subject.
The qualification obtained in the practical block, as long as it is equal to or greater than 40%, and that obtained in the participation block will be kept for 2 academic years, as long as the student requests it.
Carrying out the different tests with unauthorized help or material will be considered fraud. In accordance with the provisions of the Student Assessment Regulations, the test in which fraud has been detected will be considered invalid and will be graded with a fail (0), including any type of detected plagiarism as a fraudulent act.
If there are any changes in the planning due to unforeseen causes, students will be notified of these changes through the virtual campus.

Non-continuous evaluation:

The ordinary call will consist of an assessment of the theoretical knowledge acquired (Theoretical Block), an assessment of the completion of laboratory practices (Practical Block) and the assessment of the participation and use of the student (Participation Block).
To pass the subject, it will be an essential requirement that the student achieve at least 40% of the contents in the theoretical and practical blocks. The minimum necessary mark in all the evaluable activities of the theoretical block and the practical block will be 4.0.
The subject will be considered approved when the weighted sum of the different blocks (theoretical, practical and participation) is equal to or greater than 5.0.
The theoretical block, corresponding to 70% of the total grade for the course, can be passed by taking two partial, non-compulsory recoverable tests. Each one of them will correspond to 50% of the qualification of the theoretical block. The minimum note necessary to be able to make the weighted average between both tests will be 4.0.
The student who does not reach 40% of the theoretical content in the first partial test will not eliminate matter, and must reach 40% of the total content in the final test. The student who does not reach 40% of the theoretical contents in the second partial test will not be able to average with the mark of the first partial test, even if it is higher than 4.0.
The qualification of the practical block, corresponding to 20% of the total qualification of the subject, will be determined taking into account the attendance, participation, and evaluation of the questionnaire and examination of the practical contents. The student who does not reach 40% of the content in the different evaluable activities will not be able to average with the rest of the blocks.
The qualification of the participation block, corresponding to 10% of the total qualification of the subject, will be determined by evaluating the different activities proposed by the professor throughout the subject.
The qualification obtained in the practical block, as long as it is equal to or greater than 40%, and that obtained in the participation block will be kept for 2 academic years, as long as the student requests it.
Carrying out the different tests with unauthorized help or material will be considered fraud. In accordance with the provisions of the Student Assessment Regulations, the test in which fraud has been detected will be considered invalid and will be graded with a fail (0), including any type of detected plagiarism as a fraudulent act.
If there are any changes in the planning due to unforeseen causes, students will be notified of these changes through the virtual campus.

Any student may change to the non-continuous evaluation modality, by the procedure established by the Center, provided that they have not participated during the period of teaching classes in evaluable activities that together account for at least 50% of the total evaluation of The subject. If a student has reached that 50% of evaluable activities or if, in any case, the class period has ended, it will be considered in continuous evaluation without the possibility of changing the evaluation modality.

Specifications for the resit/retake exam:

The extraordinary call will consist of a mandatory non-recoverable final test that will account for 90% of the final grade for the subject. The grade obtained by the student in the participation block will correspond to 10% of the final grade for the subject.
The final test will consist of a theoretical part that will mean 70% of the grade, and another practical part that will mean 20% of the final grade.
To pass the subject, it will be an essential requirement that the student achieve at least 40% of the contents in the theoretical and practical blocks.
The course will be considered approved when the weighted sum of the different blocks is equal to or greater than 5.0.
The qualification obtained in the practical block, as long as it is equal to or greater than 40%, will be kept for 2 academic years, as long as the student requests it.
Carrying out the different tests with unauthorized help or material will be considered fraud. In accordance with the provisions of article 8 of the Student Assessment Regulations, the test in which fraud has been detected will be considered invalid and will be graded with a fail (0), including any type of detected plagiarism as a fraudulent act.

Specifications for the second resit / retake exam:

Only students who meet the requirements set out in the Student Assessment Regulations of the University of Castilla-La Mancha will be able to access this call. They will be evaluated according to the criteria applied in the extraordinary call.
The same criteria will be followed as for the extraordinary call of the previous course, as stated in the corresponding teaching guides (Student Assessment Regulations). This call may be used by students who are in the cases indicated in the Student Assessment Regulations in force.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	34.5

Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Study and Exam Preparation [AUTÓNOMA][Self-study]	82
Formative Assessment [PRESENCIAL][Assessment tests]	4
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1.5
On-line debates and forums [AUTÓNOMA][Problem solving and exercises]	8
General comments about the planning: Detailed time planning will be available in Moodle	
Unit 1 (de 7): Pharmacology of the Autonomic Nervous System	
Comment: Any changes in the planning due to unforeseen causes will be notified to students through the virtual campus.	
Global activity	
Activities	hours
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Class Attendance (theory) [PRESENCIAL][Combination of methods]	34.5
Formative Assessment [PRESENCIAL][Assessment tests]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	82
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1.5
On-line debates and forums [AUTÓNOMA][Problem solving and exercises]	8
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Clark, Finkel, Rey, Whalen	Farmacología	Lippincott Williams and Wilkins		978-84-15419-80-8	2012	5ª Edición
J. FLOREZ	FARMACOLOGÍA HUMANA	Elsevier Masson		978--84-458-1861-9	2014	6ª Edición
Bertram G. Katzung	Farmacología básica y clínica	McGraw-Hill		978-607-15-0336-7	2010	