Clinical Pharmacology

Code: 106697
ECTS Credits: 6

2025/2026

Degree	Type	Year
Medicine	OB	5

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

It is absolutely necessary to have achieved sufficient knowledge in general pharmacology.

It is advisable that the student has achieved basic skills in pathophysiology and clinical semiology.

Objectives and Contextualisation

The subject is programmed in the fifth year of the Degree in Medicine, when knowledge of general pathology and of the etiology, clinic and diagnosis of the main diseases and syndromes has already been achieved. The student already has a knowledge of the principles of general pharmacology and knows most groups of medicines, their mechanism of action and their main desired and unwanted effects.

The educational objectives of the subject are to provide the elements to learn how to select the most appropriate treatment for each individual patient through a reasoned process that involves assessing the efficacy, safety, convenience and cost of each available option. Additionally, it aims to raise awareness of the dynamics of medicines in society, from the search for new molecules to approval and funding decisions by health authorities, and post-marketing pharmacovigilance, as well as providing the necessary elements to be able to critically assess the information on the new medicines that are being marketed.

The theoretical knowledge of the subject is complemented by practical activities on reasoned prescription and administration of medicines, selection of treatments in patients with the most frequent pathologies seen in primary care, critical evaluation of information on new medicines, and identification and assessment of suspected adverse reactions to medicines in specific patients.

Competences

• Communicate clearly, both orally and in writing, with other professionals and the media.
• Communicate effectively and clearly, both orally and in writing, with patients, relatives and companions, to facilitate their decision-making, informed consent and compliance with prescriptions.
• Demonstrate that you understand the basics of action, indications, effectiveness and benefit-risk ratio of therapeutic interventions, based on the available scientific evidence.
• Establish diagnosis, prognosis and treatment supporting decisions with the best possible evidence and a multidisciplinary approach based on the patient's needs and involving all members of the health team, as well as the family and social environment.
• Formulate hypotheses and collect and critically assess information for problem solving following the scientific method.
• Indicate the most appropriate therapy for the most prevalent acute and chronic processes, as well as for terminally ill patients.
• Maintain and update your professional competence, giving special importance to independent learning of new knowledge and techniques and to motivation for quality.
• Organize and properly plan the workload and time in professional activities.
• Recognize the determinants of population health, both genetic and those dependent on sex, lifestyle, demography, environmental, social, economic, psychological and cultural factors.
• Have the ability to work in an international context.
• Critically evaluate and use clinical and biomedical information sources to obtain, organize, interpret and communicate scientific and health information

Competences

- Be able to work in an international context.
- Communicate clearly and effectively, orally and in writing, with patients, family-members and accompanying persons, to facilitate decision-making, informed consent and compliance with instructions.
- Communicate clearly, orally and in writing, with other professionals and the media.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate an understanding of the fundamentals of action, indications, efficacy and benefit-risk ratio of therapeutic interventions based on the available scientific evidence.
- Establish the diagnosis, prognosis and treatment, basing decisions on the best possible evidence and a multidisciplinary approach focusing on the patient's needs and involving all members of the healthcare team, as well as the family and social environment.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Indicate the most suitable treatment for the most prevalent acute and chronic processes, and for the terminally ill.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Organise and plan time and workload in professional activity.
- Recognize the determinants of population health, both genetic and dependent on gender, lifestyle, and demographic, environmental, social, economic, psychological and cultural factors.

Learning Outcomes

1. Apply the scientific method to the alternative medicines.
2. Be able to work in an international context.
3. Communicate clearly, orally and in writing, with other professionals and the media.
4. Correctly write medical prescriptions that are suited to the situation of each patient and meet legal requirements.
5. Define pharmacokinetics and know the mathematical principles that govern it. Describe the main pharmacokinetic parameters.
6. Define social pharmacology and medication and drug abuse.
7. Define the concept of drug interaction and know the main mechanisms of interactions between drugs and between drugs and other substances (food, toxic habits, medicinal plants) and diagnostic tests.
8. Define the concept of pharmacodynamics, action, effect, bioassay, dose-response and mathematical models governing the action of drugs.
9. Define the concepts of pharmacology and clinical pharmacology and know their divisions.
10. Define the problem, establish the therapeutic objectives, select treatment according to evidence of efficacy and safety, establish cost and advantages, prescribe and monitor the results.
11. Describe information systems on medication and therapies to professionals and consumers and describe their regulation.
12. Describe pharmacoepidemiology and the main types of medication epidemiology studies.
13. Describe the basis for the selection and prescription of drugs in cardiovascular , respiratory, endocrine, gastrointestinal, neurological, rheumatological, allergic disease, in infections, the treatment of acute and chronic pain, mental disorders, palliative care and in acute intoxication from the most common drugs in primary healthcare.
14. Describe the concept of risk-benefit in medical therapy.
15. Describe the concepts of drug, medication, narcotic and toxic.
16. Describe the different routes of medication administration.
17. Describe the main features of the pharmacology of the different body systems (cardiovascular, respiratory, gastrointestinal, kidney, blood, endocrine and metabolism).
18. Describe the main genetic, sexual, age, lifestyle, environmental, social, economic, psychological and cultural factors that may modify the therapeutic and toxic response of a drug.
19. Describe the main mechanisms of toxicity involved in adverse reactions to drugs.
20. Describe the main types of alternative medicines.
21. Describe the principal intoxications caused by medication and drugs.
22. Determine the importance of self-medication.
23. Differentiate the composition of analgesic, antineoplastic, antimicrobial and anti-inflammatory drugs.
24. Explain the main sources of information on medication and know how to use new search technologies.
25. Explain the principles of good prescription.
26. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
27. Gather and communicate the data on the pharmacological anamnesis.
28. Identify an infectious, cardiovascular, respiratory, endocrine, gastrointestinal, neurological, rheumatological and osteoarticular pathology induced by medication.
29. Identify methods to facilitate adherence to prescribed treatments.
30. Identify the main sources of information on medication, therapeutics and clinical pharmacology: primary, secondary and tertiary.
31. Identify the main sources of information on therapeutics and clinical pharmacology.
32. Identify the medication registration process and the legal regulation of medication.
33. Identify the methods for evaluating the efficacy and safety of a pharmacological intervention.
34. Identify the role of drugs in current and future therapy.
35. Inform patients of their treatment plan.
36. Know the methods of dose adjustment and calculate the dosage of drugs in different physiological and pathological conditions.
37. Know the principles of homeopathy, acupuncture and phytotherapy.
38. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
39. Organise and plan time and workload in professional activity.
40. Promote the rational use of medication and health products.
41. Use manual methods and new information search technologies.

Content

Distributive blocks

1. General clinical pharmacology. Medicines for human use. Information sources. New drug research methods. The clinical trial. Methodological and ethical aspects. Evaluation of the effects of medicines. Adverse reactions and interactions. Use of medicines in special populations (pregnancy, childhood and old age; kidney and heart failure). Social pharmacology. Principles of pharmacoeconomics.

2. Specific clinical pharmacology - Rational use of medicines in the main pathological processes treated in primary care: selection and prescription of medicines, and other therapeutic considerations.

Directed activities: Theoretical classes (28 hours)

Theoretical classes - General part

T1: Introduction to clinical and therapeutic pharmacology. Medicines for human use.

T2: Sources of information in clinical pharmacology.

T3: Development of medicines: scientific, methodological, bioethical and legal aspects. placebo effect

T4: Clinical trials of medicines and their methodological basis (1).

T5: Clinical trials of medicines and their methodological basis (2).

T6: Clinical pharmacokinetics and dose adjustment. Evaluation of the action and effect of medicines.

T7: Pharmacological interactions of clinical interest and interactions between medicines and other compounds.

T8: Adverse drug reactions and pharmacovigilance.

T9: Pharmacoepidemiology.

T10: Use of medicines in the health system and its economic implications.

T11: Abuse and dependence on medicines and drugs.

T12: Clinical pharmacology in pregnancy and childhood.

T13: Clinical pharmacology in the elderly.

T14: Clinical pharmacology of renal, hepatic and other pathological processes.

T15: Pharmacogenetics.

T16: Good practices in prescribing medicines. Legal regulation of prescription and types of prescriptions: prescriptions and medical orders. co-payment

Theoretical classes - Specific part

T17: Introduction to the rational use of antibiotics.

T18: Therapeutics in cardiovascular diseases.

T19: Therapeutics of psychiatric pathologies.

T20: Introduction to pain management.

T21: Therapeutics in respiratory pathology.

T22: Therapeutics in digestive pathology.

T23: Therapeutics in genitourinary pathology.

T22: Regulation of fertility.

T25: Therapeutics in osteoarticular pathology.

T26: The oncological patient in primary care.

T27: Principles of selection and appropriate use of medicines used in elderly patients.

T28: Summary of the course and conclusions

Directed activities: Clinical case seminars (SCC) (12 seminar sessions, 34 hours)

SCC - General part

SCC 1: Information sources in Clinical Pharmacology. (2 hours). Resources: Internet access. Books and articles.

SCC 2: Clinical trials of medicines and their methodological bases. placebo effect (3 hours). Resources: Article to read and comment. Q

SCC 3: Adverse drug reactions and pharmacovigilance. (3 hours). Resources: CC-Q

SCC 4: The process of selecting medicines. (3 hours) Resources: CC-Q

SCC 5: Prescription of medicines and the health system. Advertising and media. (3 hours) Resources: Newspaper News. Q

SCC 6: Alternative medicines (2 hours) Resources: CC-GT-Q

SCC - Specific part

SCC 7: Antibiotics (urinary infection and pneumonia). (3 hours) Resources: CC-Q

SCC 8: Cardiovascular (3 hours) Resources: CC-GT-Q

SCC 9: Respiratory (3 hours) Resources: CC-GT-Q

SCC 10: Diabetes (3 hours) Resources: CC-GT-Q

SCC 11: Psychiatric diseases and dementias (3 hours) Resources: CC-GT-Q

SCC 12: Pain (3 hours) Resources: CC-GT-Q

Directed activities - Advanced clinical simulation practices (PSCA) (2 sessions, 5 hours)

PSCA 1: Prescription of medicines and information to the patient. Administration and administration instructions. Dose adjustment. (2 hours) Resources: AER

PSCA 2: Pharmacological history and assessment of treatment adherence. Review of the medication plan and the achievement of therapeutic goals. Reconciliation and prescription of medication. (3 hours) Resources: AER

T = Theoretical class (1 hour). SCC = Clinical Cases Seminar (2 or 3 hours). PPT = Powerpoint Presentation; C-GT-Q = Clinical case, treatment guidelines and questionnaire. PSCA = Advanced clinical simulation practice (in humans) (2 or 3 hours) AER: Structured assessment with rubric.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Advanced clinical simulation	5	0.2	35, 3, 10, 14, 16, 25, 29, 28, 39, 40, 27, 4, 41
Clinical Case Seminars	34	1.36	3, 36, 10, 11, 13, 17, 22, 23, 25, 24, 31, 28, 38, 39, 27, 4, 41
Theory sessions	28	1.12	1, 36, 37, 8, 9, 7, 10, 6, 5, 15, 14, 18, 19, 20, 11, 12, 13, 16, 21, 22, 23, 25, 31, 26, 34, 32, 33, 28, 30, 38, 40, 2
Type: Autonomous			
Autonomous learning	75	3	1, 3, 36, 8, 9, 7, 10, 5, 15, 14, 18, 19, 12, 13, 17, 21, 23, 24, 31, 26, 34, 32, 33, 28, 30, 38, 39, 2, 41

General methodology:

Subject credits: 6 ECTS = 150 hours

AUTONOMOUS WORK (50% total = 75 hours).

Comprehensive reading of texts and articles, study and creation of diagrams, summary and conceptual assimilation of the contents.

Prior preparation of the clinical case seminars, with reading of the preparatory materials and, when appropriate (according to what is established by each unit) preparation of the presentations and assignments.

DIRECTED LEARNING: 67 hours

Theory (TE typology). Group Size: full course group. 28 scheduled sessions (1 hour per session).

Clinical Case Seminar Practices (SCC) Group size: 20 students. Scheduled sessions: 10 sessions of 3 hours and 2 sessions of 2 hours. The students, in small groups, will discuss typical clinical cases, under the direction of a tutor.

Advanced clinical simulation practices: PSCA typology (12 students per group). Scheduled sessions: 2 sessions (1 2-hour session and 1 3-hour session). Practices simulating clinical situations that require the presence of 2 teachers.

EVALUATION (5% total = 8 hours): 2 partial exams and 1 final synthesis exam; continuous evaluation of the seminars.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes

Continued evaluation through practical cases and problem solving	30%	4	0.16	35, 3, 36, 10, 14, 11, 13, 16, 17, 22, 23, 25, 24, 31, 29, 28, 38, 39, 40, 27, 4, 41
Written tests using objective measurements	70%	4	0.16	1, 36, 37, 8, 9, 7, 10, 6, 5, 15, 14, 18, 19, 20, 11, 12, 13, 16, 17, 21, 22, 23, 25, 31, 26, 34, 32, 33, 28, 30, 38, 40, 2

• Evaluation
The evaluation system will be based on a theoretical evaluation (two tests weighing 35% each, thus accounting for 70% of the final mark) and a practical evaluation (30% of the final mark).

Theoretical evaluation:
Two separate partial tests will be scheduled that will be eliminatory if the grade obtained is higher than 5.0. Thus, each test is weighing 35% of the final mark.
The partial evaluation will be through test-type questions. The tests will be multiple-choice with 5 options and only one correct answer, where errors are discounted by 0.20. The exams may include other types of questions in a complementary and optional way, at the discretion of the teaching unit. If applied, this option will be described in the specific program of the subject in each teaching unit at the beginning of the year. The lessons and seminars that will be included in each partial will be communicated via Campus Virtual.

• First partial. Students who obtain a grade equal to or higher than 5.0 out of 10.0, will be passing these subjects.
• Second partial. Students who obtain a grade equal to or higher than 5.0 out of 10.0, will be passing these subjects.

Students not passing one or both of the partial exams have the chance to undergo a synthesis exam that will include the material of all theoretical lessons and seminars. According to the UAB rules, thye student should have undertaken at least 65% of the evaluative activities in order to be able to access the synthesis exam. The synthesis exam will include test-type questions, with the option of incorporating other types of questions in a complementary and optional way, at the discretion of the teaching unit. If applied, this option will be described in the specific program of the subject in each teaching unit at the beginning of the year.

• Students who have passed the first partial may choose to examine only the questions correspondingto the second partial. They will need to get a grade equal to or higher than 5.0 out of 10.0 in this test to pass the subject.
• Students who have passed the second partial may choose to examine only the questions on the subject corresponding to the first partial. They will need to get a grade equal to or higher than 5.0 out of 10.0 in this test to pass the subject.

• Students who have not passed any of the two partials will have to take the full final exam; for these students, it will be necessary to get a grade equal to or higher than 4.0 out of 10.0 in each of the two parts of the exam to be able to average them.

Practical evaluation:

Attendance at 80% of SCCs and all PSCAs is mandatory. According to the particularities of each Hospital Teaching Unit (HTU), the practices/seminars can be graded through continuous evaluation. Continuous evaluation will be specified in the program of each HTU; in some HTU, complementary activities will be considered. In all clinical case seminars, a competency assessment will be carried out. This can include the preparation, participation and contribution to the sessions, using a rubric; or a short written assessment (question or short or test-type questions) at the end of the seminar,; or the result of individual or group interactive tests. The modality will depend on the type of seminar and set at the discretion of the responsible teacher, but at the beginning of the seminar, the method of assessment will be always communicated ahead. The theoretical content of the seminars can be evaluated as part of the theoretical tests. There will be no formal assessment of simulation practices.

Students not passing the partial tests and/or, having met the required attendance, not passing the practical part, can undertake the synthesis test, that will contain a theoretical part and a practical part.

Final qualification
The final grade is the weighted average of the theoretical knowledge (70%) and the evaluation of the SCC and PSCA (30%). It will not be possible to take the average between the theoretical assessment and the practical assessment if a minimum score of 5/10 is not obtained in both parts. In case of not being able to do the average, the final qualification will correspond to the lowest quantitative value among those obtained in the theoretical and practical evaluations.
Students not attending the scheduled partial tests nor the synthesis test will be qualified as non-evaluable.

This subject/module does not apply the single evaluation system.

In this subject, the use of Artificial Intelligence (AI) technologies is allowed as an integral part of the development of the work, as long as the final result reflects a significant contribution from the student in the analysis and personal reflection. The student must clearly identify which parts have been generated with this technology, specify the tools used, and include a critical reflection on how these have influenced the process and the final result of the activity. Lack of transparency regarding the use of AI will be considered academic dishonesty and may result in a penalty on the activity's grade, or more severe sanctions in cases of gravity.

Bibliography

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Software

No specific software will be used.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.