

1. OVERVIEW

Subject Area	MEDICAL THERAPEUTICS
Degree	Bachelor's Degree in Medicine
School/Faculty	Biomedical and Health Sciences
Ac. Year	Fifth
ECTS	6 ECTS
Type	Compulsory
Language(s)	Spanish
Delivery Mode	On campus
Semester	Six-monthly

2. INTRODUCTION

Medical Therapeutics is a compulsory subject taught each semester in the fifth year of the Degree in Medicine. It belongs to the Human Clinical Training module.

The overall objectives of this subject are:

- Provide guidelines for prescribing the correct treatment in the most significant clinical situations.
- Provide knowledge on how to use medicinal product information sources.
- Teach how to identify the particular circumstances of the different pathologies so a suitable therapeutic approach can be taken.

Medical Therapeutics is a compulsory subject taught each semester in the fifth year of the Degree in Medicine. It belongs to the Human Clinical Training module.

3. SKILLS AND LEARNING OUTCOMES

Basic Skills (CB, as per the Spanish acronym):

- CB2 Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.
- CB3. Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.
- CB4. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

General skills (CG, by the acronym in Spanish):

- CG1 Recognise the essential parts of being a medical professional, including ethical principles and legal responsibilities, together with how to provide a patient-centred service.
- CG2 Understand the importance of such principles to benefit patients, society and the profession, with particular attention paid to professional secrecy.
- CG3 Know how to apply the principle of social justice to professional practice and understand the ethical implications of health in a constantly changing world.
- CG4 Develop professional practice taking into account patient autonomy, beliefs and culture.
- CG5 Be aware of the need to maintain and update professional skills, paying special attention to continuous self-learning of emerging knowledge and to discover new products and techniques with the aim of improving quality.
- CG12 Understand the principles of action, indications and effectiveness of therapeutic interventions, based on the available scientific evidence.
- CG17 Establish the diagnosis, prognosis and treatment, applying the principles based on the most reliable information possible.
- CG18 Indicate the most suitable therapy for the most common acute and chronic processes, including patients in the terminal phase.
- CG19 Raise and propose the suitable preventative measures required for each clinical situation.
- CG20 Acquire sufficient clinical experience under supervision in hospital institutions, health centres or other healthcare institutions. This also involves basic knowledge of a patient-centred clinical approach and suitable use of tests, medicinal products and other healthcare system resources.

Cross-curricular skills (CT, by the acronym in Spanish):

CT1. Communication: ability to engage in active listening, ask questions and respond in a clear and concise way, as well as to effectively express ideas and concepts. This includes concise and clear written communication.

CT6. Problem solving: ability to solve an unclear or complex issue or situation which has no established solution and requires skill to reach a conclusion.

CT10. Independent learning: the ability to govern your own development by choosing the most effective lines of action, strategies, tools and opportunities to independently learn and apply knowledge to practice.

Specific skills (CE, by the acronym in Spanish):

- CE 4.1.1 Evaluate the risk/benefit ration of diagnostic and therapeutic procedures.
- CE 4.2.4 Be able to systematically read a radiological image. Know how to use the different drugs correctly. Know how to perform and interpret an electrocardiogram and electroencephalogram.
- CE 4.2.5 Write medical prescriptions, adapted to the circumstances of each patient and legal requirements.

Learning outcomes (RA, by the acronym in Spanish):

- Know how to suitably prescribe and administer the main pharmacological groups.
- Understand the principles of therapeutic monitoring of drugs.
- Understand the concept of adherence to treatment, influencing factors and implications.
- Be aware of the current pharmacovigilance systems.
- Know the fundamentals of pharmacoconomics.
- Know the process of how a clinical trial develops.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes
CB2, CG1, CG2, CG3, CG4, CG12, CG17, CG18, CG19, CG20, CT3, CT6, CT10, CE 4.1.1, CE 4.2.4, CE 4.2.5	Know how to suitably prescribe and administer the main pharmacological groups.
CB3, CG5, CG1, CG20, CT10, CE 4.1.1	Understand the principles of therapeutic monitoring of drugs.
CG1, CG4, CG20, CG2, CT10	Understand the concept of adherence to treatment, influencing factors and implications.
CB4, CG1, CT10	Be aware of the current pharmacovigilance systems.
CT10, CE 4.2.4	Know the fundamentals of pharmacoeconomics.
CT6, CT10	Know the process of how a clinical trial develops.

4. CONTENTS

BLOCK I: Better use of medicinal products and individualised prescription.

1. Clinical pharmacokinetics and pharmacodynamics.
2. Physiological situations which change the response.
3. Pathological situations which change the response. Kinetic and dynamic changes.

BLOCK II: Security, efficacy and efficiency assessment of medicinal products.

4. Adverse reactions to medication. Pharmacovigilance systems.

BLOCK III: Correct prescription criteria in the most common therapeutic groups.

5. Importance of the vegetative system.
6. Selection criteria and use of drugs in treating inflammation.
7. Acute and chronic pain management.
8. Management of insomnia. Depression and anxiety.
9. Using blood pressure drugs. HBP management.
10. Diuretics. Kidney failure.
11. Heart failure.
12. Ischaemic heart disease.
13. Selection criteria and use of drugs in respiratory pathologies. Asthma and COPD.
14. Management of beta-blockers (β B) and calcium channel blockers (CCB).
15. Anti-aggregation and anticoagulation management. Controlling bleeding through anticoagulant treatment.
16. Venous thromboembolic disease.
17. Management of digestive apparatus alterations I: gastrointestinal bleeding.
18. Management of digestive apparatus alterations II: cirrhosis of the liver and its complications.

19. Integral management of cardiovascular risk factors I: diabetes.
20. Integral management of cardiovascular risk factors II: dyslipidaemia and global assessment.
21. Selection criteria and use of antibiotics. Kinetic and dynamic criteria. PK-PD indicators. Post-antibiotic effect. Prophylaxis. Associations of antibiotics. Sequential treatment with antimicrobials.
22. Anaemia drugs. Iron. Vitamin B12. Folic acid. Erythropoietin stimulating agents. Indications of transfusions.
23. Hydro-electrolytic disorders and fluid therapy management.
24. Osteoporosis and gout treatments.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Problem-based learning: Presentation of problems, reorganising into small groups, literature analysis, analysis of scientific texts and documents, symposiums and presentations, directed debates, specialised individual and collective tutorials, and reaching a consensus.
- Lectures: Classroom presentations by the professor on basic theory, encouraging debate and student participation.
- Case study method: presentation and discussion of clinical cases in small groups.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On campus:

Learning activity	Number of hours
AF1: Theory/practical learning activities on-campus	64
AF2: Directed learning activities	28
AF3: Independent working	50
Tutorials	6
Knowledge tests	2
TOTAL	150 h

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the subject area, are as follows:

On campus:

Assessment system	Weighting
Knowledge test	70%

Seminars	20%
Test-type exams	10%

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

The reference work for the follow-up of the subject is:

- **HOSPITAL UNIVERSITARIO 12 DE OCTUBRE.** Manual de Diagnóstico y Terapéutica Médica. 9ª edición
- **LORENZO P, MORENO A, LIZASOAIN I, LEZA JC ET AL. Velázquez.** Farmacología básica y clínica. 19ª edición. Madrid. Panamericana, 2018

THEME-SPECIFIC REFERENCES TO CLINICAL GUIDES or CONSENSUS:

BLOCK I: Better use of medicines and individualised prescription.

1. Pharmacokinetics and clinical pharmacodynamics. REF. VELÁZQUEZ
2. Physiological situations that modify the response. REF. VELÁZQUEZ
3. Pathological situations that modify the response. Kinetic and dynamic changes. REF. VELÁZQUEZ

BLOCK II: Evaluation of the safety, efficacy and efficiency of medicines.

4. Adverse drug reactions. Pharmacovigilance Systems REF. VELÁZQUEZ

BLOCK III: Criteria for correct prescription in the most prevalent therapeutic groups.

1. Importance of the vegetative system.
2. Criteria for the selection and use of drugs in the treatment of inflammation.
3. Management of acute pain and chronic pain. IASP Guidelines for Pain Management (www.ebooks.iasp-pain.org)
4. Management of insomnia. Depression and anxiety.

Kaplan Sadock's Synopsis of Psychiatry. Behavioral Sciences/Clinical Psychiatry, 11th edition, by Benjamin James Sadock, Virginia Alcott Sadock and Pedro Ruiz, Ed. Wolters Kluwer. Chapters 29.9; 29.27 and 29.28

5. Management of antihypertensive drugs. Management of HTN. Special article ESC/ESH Guide 2018 on the diagnosis and treatment of arterial hypertension Rev Esp Cardiol. 2019; 72(2):160.e1-e78 – and Diuretics. REF. VELAZQUEZ

2018 ESC/ESH Guidelines for the management of arterial hypertension

The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH)

6. Renal Failure KDIGO Guide to Renal Failure

7. Heart failure. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Ischemic heart disease. 2019 ESC Guidelines for the diagnosis and

management of chronic coronary syndromes -European Heart Journal (2019) 00, 1-71 -ESC GUIDELINES doi:10.1093/eurheartj/ehz425 –

8. Criteria for the selection and use of drugs in respiratory pathology. Asthma and COPD. 2021 update of the Spanish COPD Guide (GesEPOC). Pharmacological treatment of stable COPD-w www.archbronconeumol.org and GOLD Consensus- Global Strategy for the Diagnosis, management and prevention of COPD -2021 REPORT

Asthma - www.gemasma.com- GEMA 5.0

"2023 GOLD REPORT: GLOBAL STRATEGY FOR PREVENTION, DIAGNOSIS AND MANAGEMENT OF COPD: 2023 Report" GOLD-2023-ver-1.3-17Feb2023_WMV.pdf

9. Management of beta-blockers (β B) and calcium channel blockers (CCBs). Antiplatelet Decision Making in Acute Coronary Syndrome

Let's optimize the use of the new oral antiplatelet agents. Proposal of common protocols in acute coronary syndrome

Inmaculada Roldán-Rabadán, Antonio Tello-Montoliu and Francisco Marín

10. Management of antiplatelet and anticoagulation. Management of bleeding by anticoagulant treatment.

Management of acute upper gastrointestinal bleeding . Adrian J Stanley, Loren Laine
Management of Nonvariceal Upper Gastrointestinal Bleeding: Guideline Recommendations From the International Consensus Group. Alan N. Barkun, MD; Majid Almadi, MD; Ernst J. Kuipers, MD; Loren Laine, MD; Joseph Sung, MD; Frances Tse, MD; Grigorios I. Leontiadis, MD; Neena S. Abraham, MD; Xavier Calvet, MD; Francis K.L. Chan, MD; James Douketis, MD; Robert Enns, MD; Ian M. Gralnek, MD; Vipul Jairath, MD; Dennis

Jensen, MD; James Lau, MD; Gregory Y.H. Lip, MD; Romaric Loffroy, MD; Fauze Maluf-Filho, MD; Andrew C. Meltzer, MD; Nageshwar Reddy, MD; John R. Saltzman, MD; John K. Marshall, MD; and Marc Bardou, MD

11. Venous Thromboembolic Disease - Reference 1 American Society of Hematology 2020 guidelines for management of venous thromboembolism: treatment of deep vein thrombosis and pulmonary embolism- Reference 2- Special Article Multidisciplinary Consensus for the Management of Pulmonary Thromboembolism – Bronchopneumology Archives ARBRES-2757; No. of Pages 9

12. Management of digestive system disorders. Manual of the Twelfth of October and reference 2 – REVISION IV Spanish Consensus Conference on the treatment of Helicobacter pylori infection dx.doi.org/10.1016/j.gastrohep.2016.05.003

13. Comprehensive management of cardiovascular risk factors. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. European Society of cardiology

14. Diabetes – ADA – Diabetes Care- Endocrinol Metab Clin N Am 50 (2021) 167–178 <https://doi.org/10.1016/j.ecl.2021.03.009>

15. Dyslipidemia - 2019 ESC/EAS Guidelines for the management

of dyslipidaemias: lipid modification to reduce cardiovascular risk European Heart Journal (2019) 00, 178 ESC/EAS GUIDELINES doi:10.1093/eurheartj/ehz455

16. Criteria for the selection and use of antibiotics. Kinetic and dynamic criteria.

Twelfth of October Handbook

17. PK-PD indicators. Post-antibiotic effect. Prophylaxis. Antibiotic associations. Sequential antimicrobial therapy. Twelfth of October Handbook

18. Anti-anemics. Iron. Vitamin B12. Folic acid. Erythropoiesis-stimulating agents. Indications for transfusions. Twelfth of October Handbook

19. Hydroelectrolyte disorders and fluid therapy management. Twelfth of October Handbook

20. Osteoporosis and antigouts –Reference 1 – Postmenopausal Osteoporosis: Latest Guidelines Rod Arceo-Mendoza, Endocrinol Metab Clin N Am 50 (2021) 167 – 178 <https://doi.org/10.1016/j.ecl.2021.03.009> and reference 2- Clinical practice guidelines for the management of patients with Gout – GUIPCLINGOT