



COURSE DATA

DATA SUBJECT

Code: 43030

Name: Fundamentals of pharmacology of inflammation

Cycle: Master's Degree / Doctorate

ECTS Credits: 3

Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
2138 - Master's Degree in Research in and Rational Use of Medicines	Facultat de Farmàcia i Ciències de l'alimentació	1	

SUBJECT-MATTER

Degree	Subject-matter	Character
2138 - Master's Degree in Research in and Rational Use of Medicines	Pharmacology of inflammation and immunity	ELECTIVES

COORDINATION

MONTESINOS MEZQUITA MARIA CARMEN

SUMMARY

Subject belonging to the research itinerary of the "Master in Research and Rational Use of Medicines" that aims to address the most important aspects of the area of inflammation. Inflammatory processes are the basis of numerous pathologies affecting a large number of people. Anti-inflammatory drugs are one of the most widely used therapeutic groups, and therefore, it is essential to have an in-depth knowledge of this therapeutic group in order to promote their rational use, as well as new therapeutic strategies and the last lines of research in this field.

This course is conducted to study the molecular and physiological basis of the inflammatory process, as well as the newest findings in the field of research. In addition, it delves into the knowledge of new therapeutic strategies and mechanisms of action of anti-inflammatory drugs.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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



OTHER REQUIREMENTS

The student must have prior knowledge of Pharmacology, Physiology, Pathophysiology and Biochemistry.

COMPETENCES / LEARNING OUTCOMES

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Be able to access to information tools in other areas of knowledge and use them properly.

Be able to apply the research experience acquired to professional practice both in private companies and in public organisations.

Be able to integrate new technologies in their professional and/or research work.

Critically analyse one's own work and that of colleagues.

Dominar el método científico, el planteamiento de protocolos experimentales y la interpretación de resultados en la búsqueda, desarrollo y evaluación de nuevos fármacos.

Dominar la comunicación científica. Poseer habilidades sociales y comunicativas en la práctica asistencial.

Know how to write and prepare presentations to present and defend them later.

Manejar adecuadamente las fuentes de información biomédica y poseer la habilidad de hacer una valoración crítica de las mismas integrando la información para aportar conocimientos a grupos asistenciales multidisciplinares

Resolver de dilemas éticos derivados del empleo de medicamentos.

Select and manage available resources (instrumental and human) to optimise research outcomes.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should demonstrate self-directed learning skills for continued academic growth.

Students should possess and understand foundational knowledge that enables original thinking and research in the field.

To acquire basic skills to develop laboratory work in biomedical research.

Utilizar adecuadamente las herramientas informáticas, métodos estadísticos y de simulación de datos, aplicando los programas informáticos y la estadística a los problemas biomédicos

DESCRIPTION OF CONTENTS



1. General basis of the inflammatory process
2. Arachidonic acid metabolism: cyclooxygenases and lipoxygenases
3. Cytokines and anticytocsins
4. Oxygenated and nitrogenous radical species
5. Nrf2
6. Adenosine
7. Biomarkers and stratified medicine
8. Main signaling and transcription pathways
9. Anti-inflammatory and anti-rheumatic drugs. New therapeutic targets

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Total hours	0,00

NON PRESENCIAL ACTIVITIES



Activity	Hours
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	25,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	45,00

TEACHING METHODOLOGY

During the activities, both theoretical and practical, the applications of the subject contents in relation to the Sustainable Development Goals (SDG) will be indicated. This is intended to provide knowledge, skills and motivation to understand and address these SDGs, while promoting reflection and criticism.

In this subject the basic methodology in the first sessions is the master class. To complement the master classes, seminars will be held to discuss and clarify doubts with students about the different topics studied throughout the program. During the development of the subject, the students will have to be preparing an individual work and / or in pairs on some the contents seen and that will be based on the analysis of recent publications in each one of the studied lines of investigation. In the last sessions, students have to present the work done, providing their own conclusions with a critical vision.

vision.

EVALUATION

It is an essential requirement in order to pass the subject attending both classroom lectures and seminars. Participation in the debates and discussions on the contents of the course, as well as the individual or in pairs' presentation will be especially appreciated.

REFERENCES

- Lappano and Maggiolini, Nat. Rev. Drug Discovery 10:47-60 (2011) Rajagopal et al., Nat. Rev. Drug Discovery 9:373-386(2010) Germain et al. Pharmacol Rev. 58:685-704, (2006) Medzhitov R., Nature 454, 7203, 428 (2008) Karin et al., Cell 124, 823 (2006) García-Arnandis et al. Arth.Res. Ther.,12:R65 (2010) Kawano & Nagata. Int. Immunol., doi: 10.1093/intimm/dxy055 (2018) Simmons et al. Pharmacol. Rev.;56:387 (2004) Kanaoka & Boyce. J. Immunol., 173: 1503 (2004) Ayala et al., Ox Med Cell Long, (2014) Nathan et al., Nat Immunol, (2013) Abusarah et al., Inflamm. Res., (2017) Lepetsos and Papavassiliou, BBA, (2016) Ferrándiz et al. Biochem Pharmacol,(2018) Oliviero et al. J Sci Food Agric, (2018)