

ACADEMIC YEAR 2023-2024



Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

OCTOBER (week 1)

	MONDAY-2	TUESDAY-3	WEDNESDAY 4	THURSDAY-5	FRIDAY-6
9-10h	Presentation <i>Prof. Fernando de la Cuesta</i> <i>Prof. Lus Gandía</i>	33199 Homeostasis. Transport through membrane. <i>Prof. Javier Blanco</i>	33199 Resting membrane potential <i>Prof. Javier Blanco</i>	33199 Synaptic transmission <i>Prof. Javier Blanco</i>	33199 General organization of the nervous system <i>Prof. Ignacio Monedero</i>
10-11h	33201 Drug development: from preclinical to human studies <i>Prof. Francisco Abad</i>	33199 Intercellular communication <i>Prof. Javier Blanco</i>	33199 Action potential <i>Prof. Javier Blanco</i>	33199 Skeletal and smooth muscle contraction <i>Prof. Javier Blanco</i>	33199 Motor nervous system: reflexes and voluntary movement <i>Prof. Ignacio Monedero</i>
11-12h	33198 Pharmacokinetics I <i>Prof. Almudena Albillos</i>	33198 Targets I: Classification of pharmacological receptors: Ion channels <i>Prof. Concha Peiró</i>	33198 Targets III: ionotropic and metabotropic receptors <i>Prof. Concha Peiró.</i>	33200 Neurotransmitters in the autonomous nervous system <i>Prof. Ana Briones</i>	33200 Neurotransmitters in the central nervous system <i>Prof. Ana Briones</i>
12-13h	33198 Pharmacokinetics II <i>Prof. Almudena Albillos</i>	33198 Targets II: Enzymes and transporters <i>Prof. Concha Peiró</i>	33201 Clinical drug development: phases and types of studies <i>Prof. Alberto Borobia</i>	33201 Clinical trials: definitions, methodological basis, the development of a clinical trial <i>Prof. Alberto Borobia</i>	33202 SEMINAR I Research resources (BRING COMPUTER)
13-14 h					<i>Prof. Elena Tortosa</i>

ACADEMIC YEAR 2023-2024



Master in Pharmacological Research

Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

OCTOBER (week 2)

	MONDAY-9	TUESDAY-10	WEDNESDAY -11	THURSDAY-12	FRIDAY-13
9-10h	33198 SEMINAR- I 9:30 to 11 h Pharmacokinetics	33199 Special senses-cont <i>Prof. Ignacio Monedero</i>	33198 SEMINAR- II Quantifying drug-receptor interaction		
10-11h	<i>Prof. Almudena Albillos</i>	33199 Languaje, learning and memory <i>Prof. Ignacio Monedero</i>	<i>Prof. Jesús Hernández-Guijo</i>		
11-12h	33199 Somatosensory system <i>Prof. Ignacio Monedero</i>	33198 Drug side effects and pharmacological interactions <i>Prof. Antonio Carcas</i>	33198 Drugs for special populations <i>Prof. Irene García</i>		
12-13h	33199 Special senses <i>Prof. Ignacio Monedero</i>	33201 Objectives definition. Selection of endpoints. Defining the study population <i>Prof. Alberto Borobia</i>	33202 Single-cell and spatial -omics <i>Prof. Fernando de la Cuesta</i>		
13-14h	33198 Targets IV: Receptors with enzymatic activity and nuclear receptors <i>Prof. Concha Peiró</i>	33200 Cholinergic drugs <i>Prof. Manuela García</i>	33199 SEMINAR Sleep <i>Prof. Ignacio Monedero</i>		

ACADEMIC YEAR 2023-2024



Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

OCTOBER (week 3)

	MONDAY-16	TUESDAY-17	WEDNESDAY -18	THURSDAY-19	FRIDAY-20
9-10h			33199 Innate immunity <i>Prof. Ignacio Monedero</i>	33201 Bias in clinical trials. Randomisation and blinding <i>Prof. Alberto Borobia</i>	
10-11h	33200 Hypnotic and sedative drugs <i>Prof. María Cano-Abad</i>	33199 Erythrocytes <i>Prof. Ignacio Monedero</i>	33199 Acquired immunity <i>Prof. Ignacio Monedero</i>	33199 SEMINAR I : Temperature Control (1h). <i>Prof. Ignacio Monedero</i>	
11-12h	33198 Polymorphisms of receptors, enzymes, metabolizers and transporters <i>Prof. Irene García</i>	33199 Haemostasis <i>Prof. Ignacio Monedero</i>	33200 Antipsychotic and antiparkinson drugs <i>Prof. Ana Briones</i>	33200 Antiepileptic drugs <i>Prof. María Cano</i>	
12-13h	33201 Types of design: parallel, crossover, sequential, therapeutic equivalence <i>Prof. Elena Ramírez</i>	33200 Antidepressants <i>Prof. María Cano</i>	33202 SEMINAR Designing a pharmacological research project II (2 hours) <i>Prof. Elena Tortosa</i> <i>Prof. M^a Dolores Sánchez</i> <i>Prof. Fernando de la Cuesta</i>	33200: SEMINAR -I Pharmacology of the ANS. <i>Prof. Ana Briones</i>	
13-14h	33199 Blood Haematopoiesis <i>Prof. Ignacio Monedero</i>				

ACADEMIC YEAR 2023-2024



Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

OCTOBER (week 4)

	MONDAY-23	TUESDAY-24	WEDNESDAY -25	THURSDAY-26	FRIDAY-27
9-10h	33201 Safety evaluation in clinical trials. <i>Prof. Elena Ramírez</i>	33198 SEMINAR- III Pharmacogenetics <i>Prof. Irene García</i>			33201 Principles of pharmacoeconomic analysis in the clinical trials <i>Prof. Lucía Díaz</i>
10-11h	33199 Introduction to cardiovascular system. Cardiac muscle <i>Prof. Javier Blanco</i>	33199 Cardiac Electric Activity. Cardiac mechanics <i>Prof. Javier Blanco</i>	33201 Analysis and interpretation of the results of a clinical trial <i>Prof. Alberto Borobia</i>	33200 Steroidal anti-inflammatory drugs (corticosteroids) <i>Prof. Concha Peiró</i>	33199 Cardiac output. Venous return <i>Prof. Javier Blanco</i>
11-12h	33200 Drugs for the treatment of migraine <i>Prof. Manuela G^a López</i>	199 SEMINAR Blood and Immune System <i>Prof. Ignacio Monedero</i>	33200 Non-steroidal and anti-inflammatory drugs <i>Prof. Concha Peiró</i>	33199 Systemic circulation <i>Prof. Javier Blanco</i>	33200 Biological anti-inflammatory drugs <i>Prof. Concha Peiró</i>
12-13h		33199 Cardiac Function <i>Prof. Javier Blanco</i>	33201 Methods of synthesis of scientific evidence: the meta-analysis <i>Prof. Lucía Díaz</i>	33199 Hemodynamics. Microcirculation <i>Prof. Javier Blanco</i>	3199 Blood pressure regulation. Special circulations <i>Prof. Javier Blanco</i>
13-14h					

ACADEMIC YEAR 2023-2024



Master in Pharmacological Research

Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

OCTOBER-NOVEMBER (week 5)

	MONDAY-30	TUESDAY-31	WEDNESDAY -1	THURSDAY-2	FRIDAY-3
9-10h	33199 Structure and functions of the respiratory system <i>Prof. Álvaro Llorente</i>	33199 Mechanics of ventilation. Spirometry <i>Prof. Álvaro Llorente</i>		33201 The ethics of clinical research: the role of investigators, regulators and ethics committees. The patient informed consent. <i>Prof. Irene García</i>	33199 SEMINAR II Cardiovascular regulation (Bring computer) <i>Prof. Javier Blanco</i>
10-11h	33200 Opioids <i>Prof. Concha Peiró</i>	33202 SEMINAR Designing a pharmacological research project I <i>Prof. Elena Tortosa</i> <i>Prof. M^a Dolores Sánchez</i> <i>Prof. Fernando de la Cuesta</i>		33199 Pulmonary ventilation and perfusion <i>Prof. Álvaro Llorente</i>	33200 Mechanism of action of antibiotics <i>Prof. Alberto Borobia</i>
11-12h	33200 Immunomodulatory drugs <i>Prof. Concha Peiró</i>	<i>Prof. Elena Tortosa</i> <i>Prof. M^a Dolores Sánchez</i> <i>Prof. Fernando de la Cuesta</i>		33199 Exchange and transport of gases <i>Prof. Álvaro Llorente</i>	33200 Clasification of antibiotics <i>Prof. Alberto Borobia</i>
12-13h	33200 Drugs for the treatment of anaemia and colony stimulating drugs <i>Prof. Luis Gandía</i>	33201 The regulation of clinical trial drug development. National and International clinical trials <i>Prof. Irene García</i>		33200 Drugs that affect blood coagulation <i>Prof. Luis Gandía</i>	

ACADEMIC YEAR 2023-2024



Master in Pharmacological Research

Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis



13-14h					
--------	--	--	--	--	--

NOVEMBER (week 6)

	MONDAY-6	TUESDAY-7	WEDNESDAY -8	THURSDAY-9	FRIDAY-10
9-10 h	33199 Renal function. Glomerular filtration and renal blood flow. <i>Prof. M^a Carmen Iglesias</i>	33199 Countercurrent mechanism. Bidirectional transport. Plasma clearance. <i>Prof. M^a Carmen Iglesias</i>			
10-11 h	33201 SEMINAR Internal validity. Assessment of bias. Examples <i>Prof. Antonio Carca</i>	33200 Antiviral drugs <i>Prof. Alberto Borobia</i>	33199 Renal control of extracellular volume and osmolarity. <i>Prof. M^a Carmen Iglesias</i>		
11-12 h		33200 Antifungal and antiparasitic drugs <i>Prof. Alberto Borobia</i>	33199 SEMINAR III Respiratory regulation <i>Prof. Álvaro Llorente</i>		
12-13 h	33200: SEMINAR- II Pharmacology of the CNS <i>Prof. María Cano</i>	33200 Pharmacology of the respiratory system <i>Prof. Manuela G^a López</i>	33201 SEMINAR End-points in clinical trials and its clinical relevance (composite, surrogate) <i>Prof. Antonio Carcas</i>		
13-14 h					

ACADEMIC YEAR 2023-2024



Master in Pharmacological Research

Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

NOVEMBER (week 7)

	MONDAY-13	TUESDAY-14	WEDNESDAY -15	THURSDAY-16	FRIDAY-17
9-10 h	33202 Statistics and probability: from sample to population <i>Prof. Carlos Sánchez Sorzano</i>	33199 Renal control of plasma pH. <i>Prof. M^a Carmen Iglesias</i>	33200 : SEMINAR III - Antiinflammatory- Immunomodulatory drugs <i>Prof. Concha Peiró</i>	*Exam : Interaction Drug-Receptor	33199 Introduction to digestive function. Mastication, salivation and deglutition <i>Prof. Javier Blanco</i>
10-11 h	33202 Confidence intervals <i>Prof. Carlos Sánchez Sorzano</i>	333202 Continuous variables (1) <i>Prof. Carlos Sánchez Sorzano</i>			33199 Stomach motility and secretion. <i>Prof. Javier Blanco</i>
11-12 h	33201 SEMINAR External validity and generalization of results <i>Prof. Antonio Carcas</i>	33202 Continuous variables (2) <i>Prof. Carlos Sánchez Sorzano</i>	33202 P-values and statistical significance (1) <i>Prof. Carlos Sánchez Sorzano</i>	33200 Ionotropic and beta-blockers <i>Prof. Ana Briones</i>	33202 Statistical assumptions <i>Prof. Carlos Sánchez Sorzano</i>
12-13 h		33200 : Pharmacology of the gastrointestinal system <i>Prof. Manuela G^a López</i>	33202 P-values and statistical significance (2) <i>Prof. Carlos Sánchez Sorzano</i>	33200 Vasodilators and calcium antagonists <i>Prof. Ana Briones</i>	33202 Statistical tests (1) <i>Prof. Carlos Sánchez Sorzano</i>
13-14 h	33199 Tubular processes: reabsorption and secretion. <i>Prof. M^a Carmen Iglesias</i>	33199 SEMINAR IV Renal function <i>Prof. M^a Carmen Iglesias</i>		33200 : SEMINAR- IV Pharmacology of blood coagulation <i>Prof. Luis Gandía</i>	33200 Pharmacology of the renin- angiotensin system <i>Prof. Ana Briones</i>

ACADEMIC YEAR 2023-2024



Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

NOVEMBER (week 8)

	MONDAY-20	TUESDAY-21	WEDNESDAY -22	THURSDAY-23	FRIDAY-24
9-10 h	33201 SEMINAR Interpretation of positive results	33201 SEMINAR Interpretation of negative results	33199 Digestion and absorption of carbohydrates and proteins <i>Prof. Javier Blanco</i>		3199 Hypothalamus-pituitary axis. <i>Prof. M^a Carmen Iglesias</i>
10-11 h	<i>Prof. Francisco Abad</i>	<i>Prof. Francisco Abad</i>	33199 Small and large intestine motility and secretion. <i>Prof. Javier Blanco</i>	33199 Digestion and absorption of lipids. Liver function <i>Prof. Javier Blanco</i>	33199 Thyroid hormones <i>Prof. M^a Carmen Iglesias</i>
11-12 h	33201 SEMINAR Publication bias and communication. Conflict of interest in the implementation and communication of results of clinical trials	33200 Diuretics <i>Prof. Ana Briones</i>	33200 Lipid lowering medication <i>Prof. Ana Briones</i>	33200 : Antineoplastic Drugs: cytostatics <i>Prof. Carlos F. Sánchez</i>	33200 : SEMINAR -IV Pharmacology of respiratory and gastrointestinal system
12-13 h	<i>Prof. Antonio Carcas</i>	33200 Drugs that regulate bone metabolism <i>Prof. Manuela G. Lopez</i>	33200 Antidiabetic drugs <i>Prof. M^a Dolores Sánchez Niño</i>	33200 : Biological Therapy in cancer <i>Prof. Concha Peiro</i>	<i>Prof. Manuela G^a López</i>
13-14 h					

ACADEMIC YEAR 2023-2024



Code **33198**: Interaction Drug-Organism
 Code **33199**: Physiological Basis of Therapeutics
 Code **33200**: Pharmacology of Organs and Systems
 Code **33201**: Methodology in Clinical Trials
 Code **33202**: Communication and scientific documentation /Data analysis

NOVEMBER-DECEMBER (week 9)

	MONDAY-27	TUESDAY-28	WEDNESDAY -29	THURSDAY-30	FRIDAY-1
9-10 h	33202 Statistical tests (2) <i>Prof. Carlos Sánchez Sorzano</i>	33202 Fitting models (1) <i>Prof. Carlos Sánchez Sorzano</i>	33202 Fitting models (3) <i>Prof. Carlos Sánchez Sorzano</i>	33200 : SEMINAR V- Pharmacology of the cardiovascular system <i>Prof. Ana Briones</i>	33200- Cellular therapy for Chron's Disease <i>Prof. Damian Gª Olmo</i>
10-11 h	33202 Statistical tests (3) <i>Prof. Carlos Sánchez Sorzano</i>	33202 Fitting models (2) <i>Prof. Carlos Sánchez Sorzano</i>	33199 Suprarenal glands <i>Prof. Mª Carmen Iglesias</i>		33200- Extracellular vesicle-based biological therapies <i>Prof. Fernando de la Cuesta</i>
11-12 h	33199 Sex hormones <i>Prof. Mª Carmen Iglesias</i>	33200 Pharmacology of sex hormones <i>Prof. M. Cano-Abad</i>	33199 SEMINAR V Intake and weight regulation <i>Prof. Mª Carmen Iglesias</i>	33200 : Gene therapy: general concepts <i>Prof. Silvia Gómez Sebastián</i>	33200 : SEMINAR VI- Pharmacology of metabolism <i>Prof. Mª Dolores Sánchez</i>
12-13 h	33199 Regulation of calcium metabolism <i>Prof. Mª Carmen Iglesias</i>	33199 Endocrine pancreas <i>Prof. Mª Carmen Iglesias</i>		33200- Application of herpes virus in gene therapy <i>Prof. Silvia Gomez</i>	
13-14 h					

ACADEMIC YEAR 2023-2024



Code 33198: Interaction Drug-Organism
 Code 33199: Physiological Basis of Therapeutics
 Code 33200: Pharmacology of Organs and Systems
 Code 33201: Methodology in Clinical Trials
 Code 33202: Communication and scientific documentation /Data analysis

DECEMBER (week 10)

	Dec- MONDAY-4	TUESDAY-5	WEDNESDAY -6	THURSDAY-7	FRIDAY-8
		*EXAM Scientific communication and documentation /Data analysis			

ı

DECEMBER (week 11)

	MONDAY-11	TUESDAY-12	WEDNESDAY -13	THURSDAY-14	FRIDAY-15
	*Exam: Physiological basis of therapeutics			*Exam: Methodology in ClinicalTrials	

DECEMBER (week 12)

	MONDAY-18	TUESDAY-19	WEDNESDAY -20	THURSDAY-21	FRIDAY-22
		*Exam: Pharmacology of Organs and Systems			

Code **33198**: Interaction Drug-Organism
Code **33199**: Physiological Basis of Therapeutics
Code **33200**: Pharmacology of Organs and Systems
Code **33201**: Methodology in Clinical Trials
Code **33202**: Communication and scientific documentation /Data analysis

Professors

Department of Pharmacology

- Almudena Albillos
- Francisco Abad Santos
- Alberto Borobia
- Ana Briones
- María F Cano-Abad
- Antonio Carcas
- Fernando de la Cuesta
- Jesús Hernández-Guijo
- Luis Gandía Juan
- Manuela García López
- Concha Peiró Vallejo
- Carlos Sánchez Ferrer
- M^a Dolores Sánchez Niño
- Elena Ramírez
- Elena Tortosa

Department of Physiology

- Javier Blanco Rivero
- M^a Carmen Iglesias de la Cruz
- Álvaro Llorente Berzal
- Ignacio Monedero Cobeta

Invited Professors

- Damián García Olmo (Hospital Fundación Jiménez Díaz)
- Silvia Gómez Sebastián (Departamento de medicina Preventiva y salud pública y microbiología)
- Carlos Oscar Sánchez Sorzano (Centro nacional de biotecnología-CNB)

Coordinators:

Prof. Luis Gandía Juan
Dpto. Farmacología-Lab 7
luis.gandia@uam.es

Prof. Fernando de la Cuesta Marina
Dpto. Farmacología-Lab 5
fernando.delacuesta@uam.es

Subject coordinators

33198: Interaction Drug-Receptor
Prof. María F. Cano Abad
maria.cano@uam.es

33199: Physiological basis of therapeutics
Prof. Javier Blanco Rivero
javier.blanco@uam.es

33200 Pharmacology of Organs and Systems
Prof. María F. Cano Abad
maria.cano@uam.es

33202:
Communication and scientific documentation
Prof. Elena Tortosa Binacua
elena.tortosa@uam.es

Data analysis
Prof. Carlos Oscar Sorzano
coss@cnb.csic.es

33201: Methodology in Clinical Trials
Prof. Antonio Carcas
antonio.carcas@uam.es