MASTER' S THESIS

1.- General information

Code	303003	Plan		ECTS	12
Type	Mandatory	Course	2025/2026	Periodicity	2nd Semester
Language		ENGLISH			
Center	CANCER RESEARCH CENTER				
Virtual Platform	https://cicloud.dep.usal.es/				

1.1.- FACULTY

Professors

ALMEIDA PARRA, Julia (Catedrática USAL)	LORENZO MARTÍN, L. Francisco (Ramón y Cajal USAL)
ALVAREZ FERNÁNDEZ, Mónica (Científica Titular CSIC)	MATEOS MANTECA, MARÍA VICTORIA, (Profesora titular USAL)
BLANCO VENAVENTE, Sandra (Científico titular CSIC)	MARTÍN PENDÁS, Alberto (Profesor de investigación CSIC)
BUENO NÚÑEZ, Andrés Avelino (Catedrático USAL)	MORENO PÉREZ, Sergio (Profesor investigación, CSIC)
CASTELLANO SÁNCHEZ, Esther (Científico titular, CSIC)	MUÑOZ FÉLIX, José Manuel (Profesor Ayudante Doctor)
DÍAZ RODRÍGUEZ, Elena (Profesora asociada USAL)	ORFAO DE MATOS, Alberto (Catedrático, USAL)
DOSIL CASTRO, Mercedes (Profesora titular USAL)	PAÍNO GÓMEZ, MARÍA TERESA (Profesora Contratada Doctora, USAL)
DROSTEN, Matthias (Investigador científico CSIC)	PANDIELLA ALONSO, Atanasio (Profesor Investigación CSIC)
ÉSPARIS OGANDO, Azucena (Contratado doctor ISCIII)	PEREDA VEGA, José María de (Científico Titular, CSIC)
FERNÁNDEZ MEDARDE Alberto (Profesor titular USAL)	PÉREZ LOSADA, Jesús (Investigador científico, CSIC)
FERRANZ DÍAZ NURIA(Ciéntifa titular CSIC)	PERICACHO BURGOS, Miguel (Profesor titular, USAL)
FUENTES GARCÍA, Manuel (Catedrático USAL)	RIVAS SANZ, Javier de las (Investigador Científico, CSIC)
GARCÍA BUSTELO Xosé Ramón (Profesor Investigación CSIC)	RODRÍGUEZ BARBERO Alicia (Profesora titular, USAL)
GARCÍA SÁNCHEZ, Mª José (Catedrática USAL)	SACRISTÁN MARTÍN, María de la Paz (Profesora titular, USAL)
GONZÁLEZ SARMIENTO, Rogelio (Catedrático USAL)	SÁNCHEZ GARCÍA, Isidro (Investigador Científico, CSIC).
GUERRERO ARROYO, Carmen (Catedrática USAL)	SANCHEZ–GUIJO MARTÍN, Fermín (Catedrático, USAL)
HERNANDEZ RIVAS, Jesús María (Catedrático USAL)	SÁNCHEZ MARTÍN, MANUEL A. (PDI, USAL)
HOLGADO MADRUGA, Marina (Profesora titular USAL)	SÁNCHEZ NAVARRO, AMPARO (Catedrática USAL)
HURTADO RODRÍGUEZ, Antoni (Investigador científico CSIC)	SANTAMARÍA, DAVID (Científico titular CSIC)

	LACAL ROMERO, Jesús (Profesor titular USAL)	SANTOS DE DIOS, Eugenio (Profesor emérito USAL)
	LLANO CUADRA, Elena (Catedrática USAL)	VICENTE MANZANARES, Miguel (Científico Titular CSIC)
	LÓPEZ DOMÍNGUEZ, JOSÉ A.(Contratado Ramón y Cajal USAL)	

2.- Previous recommendations

Development of the course "*Practicum in Biology and Clinical of Cancer*"

3.- Aims of the subject

The Master's Thesis (TFM) aims to demonstrate the knowledge acquired, the student's research capacity, as well as their communication skills and ability to defend the project carried out. It consists of the elaboration of a well-reasoned and structured report on the research project developed during the "*Practicum in Biology and Clinical of Cancer*" course. The project must always be related to Cancer Biology and Clinical Oncology.

(The tutorials and support required by the student will be attended by the work director).

4.- Skills to be acquired / Learning outcomes

Competencias

Basic skills:

- Capacity for analysis, global visions and synthesis of the obtained data.
- Critical thinking and understanding the importance of generated data in the global knowledge of that specific research area.

Specific skills:

- Ability to integrate information from different sources to get the the most up-to-date knowledge about a molecular or cellular process.
- Know how to access information and data on highly specialized areas of biological research.
- Ability to distinguish those results or data with a significant impact in the specific topic.

Transversal skills:

- Critical thinking and capacity to distinguish the scientific works that constitute an important contribution to the progress of knowledge.

5.- Contents (Syllabus)

Preparation of a well-reasoned and structured paper on a topic related to the Biology and Clinical Aspects of Cancer. The work may be either theoretical or practical in nature and must be organized according to the sections indicated under the guidance of the faculty.

RESEARCH PROJECT 2025/2026	RESEARCH GROUP
"Biological characterization of T- and NK-cell neoplasms"	Julia Almeida Parra
"Mechanisms of therapy resistance in squamous cell carcinomas"	Mónica Álvarez Fernández
"Cancer epitranscriptomics"	Sandra Blanco Benavente
"Genomic stability: Regulation of replication and the DNA Damage Tolerance"	Andrés Avelino Bueno Núñez María Sacristán Martín
"Mitotic membranes and genome integrity"	Nuria Ferrándiz Díaz
"Molecular mechanisms mediating tumour:stroma crosstalk"	M. Esther Castellano Sánchez
"Ribosome synthesis in normal and cancer cells"	Mercedes Dosil Castro
"Molecular characterization of resistance mechanisms to targeted therapies in lung cáncer" "Identification of novel therapeutic targets for KRAS-mutant lung cancer"	Matthias Drosten
"Role of Ras GEFs RasGrf1 and RasGrf2 in the Central Nervous System"	Alberto Fernández Medarde
"NanoMedicina en inmunoterapia y oncohematología"	Manuel Fuentes García
"Identification and validation of new oncogenic drivers in hematopoietic and solid tumors" "Development of new pharmacological strategies to block early oncogenic signaling proteins in cancer"	Xosé R. García Bustelo
"Hereditary cancer diagnosis. DNA repair and/or epigenetic modifiers in the treatment of cancer"	Rogelio González Sarmiento
"New treatments in hemopathies: from the laboratory to the clinic" "Role of the bone marrow microenvironment in the pathology of multiple myeloma" "Study of new therapeutic combinations and resistance mechanisms in multiple myeloma: targeted drugs and immunotherapies"	M Victoria Mateos Manteca Mercedes Garayoa Berrueta María Teresa Paíno Gómez
"Role of C3G in the biology of platelets and megakaryocytes. Understanding the role of C3G in hematopoiesis and hematopoietic stem cell (HSC) disorders"	Carmen Guerrero Arroyo
"Molecular Cytogenetics in Oncology" "NGS and Big Data in hematological malignancies"	Jesús María Hernández Rivas
"Mechanisms of hormone resistance and breast cancer"	Toni Hurtado
"Immuno-oncology and aging"	José A. López Domínguez

"Advanced cancer systems and oncogenomics"	L. Francisco Lorenzo Martín
"Development and characterization of new murine models of chromosomal instability and their involvement in cancer, aging and fertility"	Elena Llano Cuadra Alberto Martín Pendás
"The Gab1 docking protein in cancer and its possible use as a therapeutic target"	Marina Holgado
"Molecular mechanisms regulating cell growth and division: implications in cancer and aging"	Sergio Moreno Pérez
"New strategies for treatment of non-angiogenic tumors and metastases"	José Manuel Muñoz Félix
"Characterization of the genetic alterations and signaling pathways involved in the clonal development and neoplastic transformation of B cells of subjects with clonal B lymphocytosis (MBL) vs patients with chronic lymphatic leukemia (LLC)"	Alberto Orfao de Matos Julia Almeida Parra Manuel Fuentes García
"Antibody-drug conjugates in cancer"	Atanasio Pandiella Azucena Ésparis Ogando María Elena Díaz Rodríguez
"Structural biology of cell adhesion and signaling"	José María de Pereda Vega
"Model-Informed Precision Dosing of anticancer drugs" "Population pharmacokinetics and dosage optimization strategies of anticancer drugs"	Amparo Sánchez Navarro María José García Sánchez José Germán Sánchez Hernández Paulo Roberto Teixeira
"Molecular and Genetic Determinants of cancer susceptibility, evolution, and treatment response"	Jesús Pérez Losada
"Role of endoglin in angiogenesis and tumor angiogenesis"	Alicia Rodríguez Barbero Miguel Pericacho Bustos
"Bioinformatics and Functional Genomics in Cancer: discovery of biomarkers, gene signatures and regulators in omic data from patients, with a focus on transcriptomic and single-cell data" "Bioinformatics and Computational Biology in Cancer: application of machine learning, deep learning and artificial intelligence to study prognosis, therapeutic response and resistance in cancer patients using omic data"	Javier de las Rivas Sanz
"Mechanisms responsible for clonal evolution with the aim of leukemia prevention"	Isidro Sánchez García
"Bone marrow normal and leukemic niche and immune-effector cells"	Fermín Sánchez-Guijo Martín Sandra Muntión

“Genome editing by CRISPR-Cas system technology: generation of new preclinical mouse models.”	Manuel A. Sánchez Martín
"Novel RAS biology with therapeutic potential"	David Santamaría
“Structure and function of Ras oncogenes and their molecular regulators”	Eugenio Santos de Dios
"Role of TGFbeta signaling and EMT-TFs in the progression of hepatobiliary tumors" "Identification of new molecular targets for the treatment of hepatobiliary tumors"	Javier Vaquero Rodríguez
"Force generation and mechanotransduction during metastasis and tumor growth" "Mechanics of the tumor microenvironment and the anti-tumor immune response" "Mechanical determinants of cellular plasticity during tumorigenesis and virus infection".	Miguel Vicente Manzanares

6.- Teaching methodology

Student will be provided with all the laboratory tools and infrastructures necessary to carry out the project and to elaborate the final Master´s thesis. Moreover, a direct supervision by the tutor will ensure the necessary ongoing support for the student.

6.1.- Estimated learning time

		Hours tutored by the teacher		Individual work (hours)	TOTAL HOURS
		Attendance required (hours)	Distance learning (hours)		
Lectures					
Practices	- **In classroom**				
	- **In laboratory**	200			200
	- **In computer classroom**				
	- **Countryside**				
	- **Others (specify)**				
Seminars					
Work presentations and debates					
Tutorials		20			20
Online activities					
Work preparation				80	80
Other activities					
Exams - evaluation					
TOTAL		**220**		**80**	**300**

7.- Materials, other bibliographical, electronic references or any other type of resource

Given by the tutor

8.- Assessment

8.1: Assessment Criteria:

- Scientific and technical quality of work.
- Quality of the delivered material.
- Clarity of presentation (oral and written).
- Synthesis skill.
- Capacity for debate and argument defense.

8.2: Assessment Systems:

An Evaluation Committee, consisting of three professors of the Máster´s Degree, will take care of the assessment.

The Evaluation Committee establishs the dates for the delivery and defense of the Master´s Thesis (within the terms established in the academic calendar).

8.3: General Considerations and Recommendations for Assessment and Resits:

9.- Weekly Teaching Schedule