MASTER' S THESIS

1.- General information

Code	303003	Plan		ECTS	12
Type	Mandatory	Course	2026/2027	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)	MATEOS MANTECA, MARÍA VICTORIA, (Profesora titular USAL)
ALVAREZ FERNÁNDEZ, Mónica (Científica Titular CSIC)	MARTÍN PENDÁS, Alberto (Profesor de investigación CSIC)
BLANCO VENAVENTE, Sandra (Científico titular CSIC)	MORENO PÉREZ, Sergio (Profesor investigación, CSIC)
BUENO NÚÑEZ, Andrés Avelino (Catedrático USAL)	MUÑOZ FÉLIX, José Manuel (Profesor Ayudante Doctor)
CASTELLANO SÁNCHEZ, Esther (Científico titular, CSIC)	ORFAO DE MATOS, Alberto (Catedrático, USAL)
DÍAZ RODRÍGUEZ, Elena (Profesora asociada USAL)	PAÍNO GÓMEZ, MARÍA TERESA (Profesora Contratada Doctora, USAL)
DOSIL CASTRO, Mercedes (Profesora titular USAL)	PANDIELLA ALONSO, Atanasio (Profesor Investigación CSIC)
DROSTEN, Matthias (Investigador científico CSIC)	PEREDA VEGA, José María de (Científico Titular, CSIC)
ÉSPARIS OGANDO, Azucena (Contratado doctor ISCIII)	PÉREZ ANDRÉS MARTÍN (Profesor Titular USAL)
FERNÁNDEZ MEDARDE Alberto (Profesor titular USAL)	PÉREZ LOSADA, Jesús (Investigador científico, CSIC)
FERRANZ DÍAZ NURIA(Científico titular CSIC)	PERICACHO BURGOS, Miguel (Profesor titular, USAL)
FUENTES GARCÍA, Manuel (Catedrático USAL)	RIVAS SANZ, Javier de las (Investigador Científico, CSIC)
GARAYOA BERRUETA, Mercedes (Contratado Dr.)	ROBLES VALERO, Javier (Profesor Ayudante Dr. USAL)
GARCÍA BUSTELO Xosé Ramón (Profesor Investigación CSIC)	RODRÍGUEZ BARBERO Alicia (Profesora titular, USAL)
GONZÁLEZ SARMIENTO, Rogelio (Catedrático USAL)	SACRISTÁN MARTÍN, María de la Paz (Profesora titular, USAL)
GUERRERO ARROYO, Carmen (Catedrática USAL)	SÁNCHEZ GARCÍA, Isidro (Investigador Científico, CSIC).
HERNÁNDEZ RIVAS, Jesús María (Catedrático USAL)	SÁNCHEZ–GUIJO MARTÍN, Fermín (Catedrático, USAL)
HERRERO HERNÁNDEZ, ANA BELÉN (Profesora Titular)	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)
	LLANO CUADRA, Elena (Catedrática USAL)	SANTOS DE DIOS, Eugenio (Profesor emérito USAL)
	LÓPEZ DOMÍNGUEZ, JOSÉ A.(Contratado Ramón y Cajal USAL)	VAQUERO RODRÍGUEZ, Javier (Ramón y Cajal CSIC)
	LORENZO MARTÍN, L. Francisco (Ramón y Cajal USAL)	VICENTE MANZANARES, Miguel (Científico Titular CSIC)

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 2026/2027	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
"*DNA Replication Stress and Damage Tolerance: Drivers of Genomic Instability in Cancer*"	Andrés Avelino Bueno Núñez María Sacristán Martín
"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 cancer" "Identification and validation of novel therapeutic targets KRAS for KRAS-mutant lung cancer"	Matthias Drosten
"Analysis of SOS proteins as therapeutic targets in cancer"	Alberto Fernández Medarde
"Mitotic membranes and genome integrity"	Nuria Ferrándiz Díaz
"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" "Functional Characterization of Genetic Variants in Hereditary Cancer" "Novel Therapeutic Strategies and Drug Combinations in Cancer Treatment"	Rogelio González Sarmiento Ana Belén Herrero Hernández
"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
"Mechanisms of cellular senescence" "Immune regulation in post-therapy tumors"	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 lymphoid clones and their immune microenvironment in pre-tumoral conditions (MBLlo, T-CUS, IgM MGUS and non-IgM MGUS) for the identification of risk of progression and early death in the general population”	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
“Characterization of lymphoid clones and their immune microenvironment in patients with immunodeficiency: implications for the ontogeny and early diagnosis of lymphoma”	Martín Pérez Andrés
“Model-Informed Precision Dosing of anticancer drugs” “Population pharmacokinetics and dosage optimization strategies of anticancer drugs”	Amparo Sánchez Navarro José Germán Sánchez Hernández Hinojal Zazo Gómez
“Molecular and Genetic Determinants of Cancer Susceptibility, Tumor 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

“Functional characterization of GTPase-driven oncogenic pathways in hematological tumors”	Javier Robles Valero
“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