Universidad Zaragoza

Academic Year: 2024/25

66156 - Nanoparticles for the diagnosis and treatment of cancer

Teaching Plan Information

Academic year: 2024/25
Subject: 66156 - Nanoparticles for the diagnosis and treatment of cancer
Faculty / School: 104 - Facultad de Medicina
Degree: 637 - Masters degree in Tumor Immunology and Cancer Immunotherapy
ECTS: 3.0
Year: 1
Semester: Second semester
Subject type: Optional
Module:

1. General information

Nanoparticles are being used in various oncological specialties. Some specific uses are: 1) as vehicles for transporting drugs, capable of targeting them to the tumour environment avoiding side effects; 2) as therapies in themselves and 3) as tumour markers for the diagnosis of the disease.

The objective of the subject is to learn about tumour diagnostic and therapeutic strategies based on nanoparticles that are currently under development, both in the preclinical stage and in clinical trials.

2. Learning results

- General knowledge of nanomaterials.
- Basic skills in synthesis and characterization of nanoparticles.
- Advanced knowledge of biomedical applications of nanoparticles.

3. Syllabus

Theoretical sessions:

1) Introduction to nanoscience and nanomaterials.
2) Synthesis and characterization of nanoparticles.
3) Functionalization of nanoparticles with biomolecules of interest for different applications in biomedicine.

4) Toxicity and biodistribution of nanoparticles.
5) Introduction to therapeutic and diagnostic applications of nano biomedicine.
6) Applications of nanoparticles for cancer diagnosis.
7) Applications of nanoparticles for oncological treatments.

Practical sessions:
1) Synthesis of nanoparticles.
2) Characterization of nanoparticles (TEM, Magnetometry, others).
3) Analysis and treatment of the results.

4. Academic activities

The learning activities are distributed as follows:

Participative master classes: 14 hours.
Laboratory experimentation: 10 hours.

Seminar: 2 hours.
Presentation and explanation of a work: 4 hours.

Student work: 45 hours.

5. Assessment system

Active participation in the lectures and practical sessions of the subject: 10 %.

Written work done by students: 50%.

Oral presentation of the work: 40%.

6. Sustainable Development Goals

3 - Good Health & Well-Being