

26949 - Biological Physics

Syllabus Information

Academic Year: 2019/20

Subject: 26949 - Biological Physics

Faculty / School: 100 -

Degree: 447 - Degree in Physics

ECTS: 5.0

Year: 3

Semester: Second semester

Subject Type: Optional

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

4.2.Learning tasks

4.3.Syllabus

The course will address the following topics:

- Topic 0. Physics and Biology. Historical introduction and motivation.
- Topic 1. Molecular and cellular biology review. Biological molecules: DNA, RNA and proteins. Membranes
- Topic 2. Random walks and diffusion.
- Topic 3. Statistical physics in and out of equilibrium.
- Topic 4. Life at low Reynolds number.
- Topic 5. Properties of water.
- Topic 6. Physics of Biopolymers.
- Topic 7. Cooperative phenomena.
- Topic 8. Self-assembly and self-organization.

- Topic 9. Molecular motors.
- Topic 10. Physics of nervous system.
- Topic 11. Systems Biology.

4.4.Course planning and calendar

4.5.Bibliography and recommended resources