

# 62235 - Bioinspired models for Complex Systems Engineering

## Syllabus Information

**Academic Year:** 2019/20

**Subject:** 62235 - Bioinspired models for Complex Systems Engineering

**Faculty / School:** 110 -

**Degree:** 534 - Master's in IT Engineering

**ECTS:** 3.0

**Year:** 2

**Semester:** First semester

**Subject Type:** ---

**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

The methodology followed in this course is oriented towards achievement of the learning objectives. It is based on learning by experience. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving, laboratory sessions, autonomous work, and assignments.

### 4.2.Learning tasks

The course (75 hours) includes the following learning tasks:

- Classroom activities (30 hours). Seminars, problem solving, laboratory, visits, etc.
- Practice and research assignments (20 hours).
- Autonomous work and study (20 hours).
- Assessment (5 hours).

### 4.3.Syllabus

The course will address the following topics:

- Artificial Life: Models and algorithms

- Mathematical and computational models for designing complex systems
- Structural properties in complex organizations
- Adaptive behavior and evolutionary computation
- Dynamics in complex systems and emergent processes
- Self-organizing systems: minimal and large-scale examples
- Engineering applications in biology, social systems, economical studies, technology, etc.

More information in: <http://sistemica.unizar.es>

#### **4.4.Course planning and calendar**

The classroom sessions will have an estimated duration of 60 hours distributed between lectures, problem-solving activities, and laboratory sessions.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the course website.

#### **4.5.Bibliography and recommended resources**