30208 - Discrete mathematics

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
	326 - Escuela Universitaria Politécnica de Teruel
Degree	439 - Bachelor's Degree in Informatics Engineering
	443 - Bachelor's Degree in Informatics Engineering
ECTS	6.0
Year	1
Semester	Second semester
Subject Type	Basic Education
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

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

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The learning process designed for this course is based on the following items:

1. An active engagement of the student during the lectures.
2. An effective scheduling on the part of the student, studying the subject on a regular basis and trying to solve the proposed problems.
3. Previous preparation on the student's part of the material to be covered during the computer lab sessions.

5.2.Learning tasks

The program offered to the student to help them obtain the expected learning outcomes comprises the following activities...

1. Lectures.
2. Computer lab sessions.
3. Tutorials.

5.3.Syllabus

1. Logic

Connectives, truth tables, logical equivalence, tautologies, valid and invalid arguments, introduction to predicate logic.

2. Number theory

Principle of induction, Euclidean division, Euclidean algorithm, Bézout's identity, fundamental theorem of arithmetic, congruences, Chinese remainder theorem, modular binary exponentiation, Fermat's little theorem, Euler's theorem, RSA.

3. Combinatorics

Permutations, combinations, rule of sum, rule of product, binomial coefficients, pigeonhole principle, inclusion-exclusion principle, recurrence relations.

4. Graph theory

Basic concepts, Eulerian graphs, Hamiltonian graphs, matrix representations of graphs, isomorphisms of graphs, trees, Kruskal's algorithm, Prim's algorithm, Dijkstra's algorithm.

5.4.Course planning and calendar

Planning

The amount of time required to obtain the expected learning outcomes is estimated at 150 hours, distributed as follows:

- 45 hours of lectures (3 hours per week)
- 12 hours of computer lab sessions (6 sessions of 2 hours each)
- 90 hours of independent learning
- 3 hours of final written exam

Scheduling

The schedule of the face-to-face classroom sessions is set by the institution, and can be found in its webpage. Dates for the assessment tests will be announced well in advance.

5.5.Bibliography and recommended resources