30208 - Discrete mathematics

Información del Plan Docente

Academic Year	2016/17
Academic center	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
Course	1
Period	Second semester
Subject Type	Basic Education
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation
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 activities

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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.Program

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.Planning and scheduling
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 recomended resources