

## 27008 - General Topology

### Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	453 - Degree in Mathematics
ECTS	9.0
Year	2
Semester	Annual
Subject Type	Compulsory
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 is based in the following items:

- Theoretical Lectures,
- Problem sessions.

#### **5.2.Learning tasks**

## 27008 - General Topology

Theoretical Lectures.

Participative problem sessions.

Semipresential learning through the Moodle page of the subject; moodle.unizar.es (acces restricted to students enrolled in the subject).

### 5.3.Syllabus

#### GENERAL TOPOLOGY

- 1.- METRIC SPACES (I): Normed linear spaces. Metric spaces. Limit point, Derived and Closure set. Open sets.
- 2.- TOPOLOGICAL SPACES: Topological spaces. Bases and subbases. Interior, derived set, clousure and frontier.
- 3.- CONTINUOUS FUNCTIONS: Relative topology and subspaces. Open and closed maps, homeomorphisms. Product spaces. Quotient spaces.
- 4.- SEPARATION AND COUNTABILITY: Hausdorff spaces. Regular spaces. Normal spaces. Countability properties and related concepts.
- 5.- COMPACTNESS: Compact spaces. Locally compact spaces. Alexandroff compactification. Countably and sequentially compact spaces.
- 6.- METRIC SPACES (II): Compactness in metric spaces. Complete metric spaces. Completion of a matric space.
- 7.- CONNECTEDNESS: Connected spaces. Locally connectes spaces. Pathwise connected spaces. The homotopy relation.
- 8.- HOMOGENEOUS SPACES: Topological groups. Topological transformations groups. Topology of linear groups.

### 5.4.Course planning and calendar

Schedules of lectures and problems will coincide with the officially established and will be available at:

<https://ciencias.unizar.es>

### 5.5.Bibliography and recommended resources

- Dugundji, James. Topology / James Dugundji Boston : Allyn and Bacon, 1966
- Higgins, P. J.. Introduction to topological groups / P. J. Higgins Cambridge : University Press, 1974
- Munkres, James R. Topología / James R. Munkres; traducción, Ángel Ferrández Izquierdo ... [et al.] . - 2ª ed. Madrid : Prentice Hall, D.L. 2001
- Willard, Stephen. General topology / Stephen Willard . - [1st. ed.] Reading, Massachusetts [etc.] : Addison-Wesley, cop. 1970