

27041 - Differentiable Manifolds

Syllabus Information

Academic Year: 2020/21

Subject: 27041 - Differentiable Manifolds

Faculty / School: 100 - Facultad de Ciencias

Degree: 453 - Degree in Mathematics

ECTS: 6.0

Year: 4

Semester: First 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

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving sessions, tutorials and autonomous work and study.

4.2.Learning tasks

This course is organized as follows:

- **Lectures.** At the end of each chapter there will be an exercise to prove the understanding of the contents and guarantee the learning process.
- **Problem-solving sessions** in small groups
- **Tutorials.** Teachers will attend students during office hours.
- **Autonomous work and study.**

The teaching activities and assessment tasks will take place in a face-to-face mode, except in the case that, due to the health situation, the dispositions emitted by the competent authorities and by the University of Zaragoza compel to take them in a telematic form.

4.3.Syllabus

This course will address the following topics:

- **Topic 1.** Differentiable manifolds.
- **Topic 2.** The topology of a manifold . Partitions of the unity.
- **Topic 3.** Differentiation on a manifold
- **Topic 4.** Submanifolds
- **Topic 5.** Quotient manifolds
- **Topic 6.** Vector fields
- **Topic 7.** Embedding theorems.
- **Topic 8.** Transversality.

4.4.Course planning and calendar

The same will be done with the date, place and time of the final exam. 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 Faculty of Sciences website and Moodle.

4.5.Bibliography and recommended resources

- Auslander,L - Mackenzie, R.E. Introduction to Differentiable Manifolds. Mc.Graw-Hill. 1963.
- Boothby,W.M. An introduction to Differentiable Manifolds and Riemannian Geometry . Ac. Press. 1975.
- Brickell,F.-Clark,R.S. . Differentiable Manifolds . Van Nostrand, 1970.
- Burns, K - Gidea ,M . Differentiable Geometry and Topology. Chapman & Hall /CRC. 2005
- Conlon,L. Differentiable Manifolds. A First Course. Birkhäuser , 1993
- Gamboa J.M. - Ruiz J.M. Iniciación al estudio de las Variedades Diferenciables. Sanz y Torres 2016
- Lee , J.M. Introduction to smooth manifolds. Springer-Verlag 2002.
- Outerelo, E. - Ruiz, J.M - Rojo J.A. Topología Diferencial. Sanz y Torres 2014.

http://biblos.unizar.es/br/br_citas.php?codigo=27041&year=2020