

## SUBJECT TEACHING GUIDE

M1505 - Themes on Geometry and Topology

Master's Degree in Mathematics and Computing

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Master's Degree in Mathematics and Computing			Type and Year	Optional. Year 1
Faculty	Faculty of Sciences				
Discipline					
Course unit title and code	M1505 - Themes on Geometry and Topology				
Number of ECTS credits allocated	3	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION				
Name of lecturer	NURIA CORRAL PEREZ				
E-mail	nuria.corral@unican.es				
Office	Facultad de Ciencias. Planta: + 3. DESPACHO NURIA CORRAL PEREZ (3003C)				
Other lecturers					

### 3.1 LEARNING OUTCOMES

- To know and to be able to work with different techniques used in the study of singularities

### 4. OBJECTIVES

To give an introduction to some research subjects in the area of Geometry and Topology

## 6. COURSE ORGANIZATION

### CONTENTS

1	Introduction to the singularities of plane curves
1.1	Singular points of a plane curve: germs of curves, multiplicity, tangent cone
1.2	Newton-Puiseux algorithm: Newton polygon, fractionary power series, Puiseux series, Puiseux theorem, characteristic exponents and Puiseux pairs. Semigroup of a plane curve
2	Reduction of singularities of plane curves: blow-up of a point, strict transform of a curve, infinitely near points, reduction of singularities, dual graph, equisingularity invariants
3	Prepare an individual project

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Resolution of problems	Others	No	Yes	70,00
Final Project	Work	No	Yes	30,00
TOTAL				100,00
Observations				
Observations for part-time students				
These students can choose between the evaluation system of regular students and one in which they only need to do the final project.				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

E. Casas-Alvero: Singularities of Plane Curves.  
London Mathematical Society, Lecture Note Series, 276. Cambridge University Press, 2000.

C. T. C. Wall: Singular points of plane curves.  
London Mathematical Society Student Texts, 63. Cambridge University Press, 2004.