SUBJECT TEACHING GUIDE

M1516 - Algebra and Algorithms

Master's Degree in Mathematics and Computing

Academic year 2021-2022

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	M1516 - Algebra and Algorithms				
Number of ECTS credits allocated	3	Term		Semester based (1)	
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION
Name of lecturer	JESUS JAVIER JIMENEZ GARRIDO
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Other lecturers	

3.1 LEARNING OUTCOMES

- Compute resultants, factor univariate polynomials, work with semialgebraic sets, curves and surfaces from an algorithmic point of view.

4. OBJECTIVES

Show the connection between algebra and algorithms via aplications

6. COURSE ORGANIZATION

CONTENTS	
1	Factorisation of univariate polynomials
2	Real algebraic geometry, quantifier elimination
3	Curves and surfaces in computer aided geometry

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Personal work	Others	No	Yes	100,00
TOTAL				100,00

Observations
Observations for part-time students
Part time student will follow the same evaluation as regular students

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Saugata Basu, Richard Pollack, Marie-Françoise Roy: Algorithms in Real Algebraic Geometry. Springer-Verlag, 2006.

Joachim von zur Gatten y Jürgen Gerhard: Modern Computer Algebra. Cambridge University Press, 1999.

Johannes Grabmeier, Erich Kaltofen y Volker Weispfenning (editores): Computer Algebra Handboot (Foundations · Applications · Systems). Springer-Verlag, 2003.

Michel Coste: An introduction to Semialgebraic Geometry. Curso manuscrito RAAG Network, Universidad de Rennes, Francia. (Acceso libre en la web)