SUBJECT TEACHING GUIDE

G113 - Further Algebra

Double Degree in Physics and Mathematics
Degree in Mathematics

Academic year 2020-2021

1. IDENTIFYING DATA					
Degree	Double Degree in Physics and Mathematics Degree in Mathematics			Type and Year	Optional. Year 5 Optional. Year 4
Faculty	Faculty of Sciences				
Discipline	Subject Area: Further Algebra and Geometry Mention in Pure and Applied Mathematics				
Course unit title and code	G113 - Further Algebra				
Number of ECTS credits allocated	6	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	LUIS FELIPE TABERA ALONSO
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Other lecturers	MARIA DE UJUE ETAYO RODRIGUEZ

3.1 LEARNING OUTCOMES
- Compute in the localization of a ring
- Understand geometric properties of an algebraic set from algebraic properties of its local ring
- Construct the completion of a ring
- Compute the dimension of a finitely generated K-algebra

4. OBJECTIVES
This is a course in commutative algebra centered in the study of local rings and integral extensions.

6. COURSE ORGANIZATION

CONTENTS	
1	Reinterpretation of known results
2	local rings, Nakayama's lemma, Krull's intersection theorem, completion of a ring, valuations
3	integral extension, integral closure, Noether's normalization, nullstellensatz, dimension of a finitely geenerated K-algebra.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
written test	Written exam	No	Yes	100,00
final test	Written exam	Yes	No	0,00
TOTAL				100,00

Observations
Observations for part-time students
Part time students will follow the same tests as regular students.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

M.F. Atiyah, I.G. Macdonald "introducción al álgebra conmutativa", reverte, 1978

L.F. Tabera, "Apuntes de ampliación de álgebra"