

SUBJECT TEACHING GUIDE

G50 - Astronomy

Double Degree in Physics and Mathematics
Degree in Physics

Academic year 2021-2022

| 1. IDENTIFYING DATA | | | | | |
|----------------------------------|---|------------------|--------------------|------------------|--|
| Degree | Double Degree in Physics and Mathematics Degree in Physics | | | Type and Year | Compulsory. Year 4 Compulsory. Year 3 |
| Faculty | Faculty of Sciences | | | | |
| Discipline | Subject Area: Classical Mechanics and Astronomy Central Module | | | | |
| Course unit title and code | G50 - Astronomy | | | | |
| Number of ECTS credits allocated | 6 | Term | Semester based (1) | | |
| Web | | | | | |
| Language of instruction | Spanish | English Friendly | Yes | Mode of delivery | Face-to-face |

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|------------------|---|--|--|--|--|
| Department | DPTO. FISICA MODERNA | | | | |
| Name of lecturer | JOSE IGNACIO GONZALEZ SERRANO | | | | |
| E-mail | joseignacio.gonzalez@unican.es | | | | |
| Office | IFCA - Edificio Juan Jordá. Planta: + 0. DESPACHO (010) | | | | |
| Other lecturers | SILVIA MATEOS IBAÑEZ AMALIA CORRAL RAMOS | | | | |

3.1 LEARNING OUTCOMES

- To have a global view of the Universe, structure scales, and Earth place in the Universe
- To know the role of acting forces in the Universe and their application scale
- To understand the star life-cycle.
- To understand phenomena such as black holes
- To understand the role of General Relativity to study the Universe
- To know the Big Bang evidences and, in particular, the relevance of the cosmic microwave background
- To know the interplay between different observations made with different instruments at different wavelengths
- To analyze new phenomena based on indirect evidences

4. OBJECTIVES

- Application of Physics to an astronomical context
- Identification of the most relevant physical processes that occur in different astronomical objects
- Application of simple physical approximations to understand astronomical objects
- Familiarity with the data acquisition procedure
- Analysis of real and simulated astronomical data to obtain physical information
- Critically evaluate reliability of calculations based on order of magnitude and physical reasoning
- To obtain information about astronomical topics: analyse and summarize that information critically
- To present and discuss scientific results in public

6. COURSE ORGANIZATION

CONTENTS

| | |
|----|--|
| 1 | Introduction |
| 2 | Physical processes in Astronomy |
| 3 | Positional Astronomy |
| 4 | Observables and instrumentation in Astronomy |
| 5 | The Sun and the Solar System |
| 6 | Extrasolar planets. Life in the Universe. |
| 7 | The Sun |
| 8 | Stars and star evolution |
| 9 | Galaxies. Active galaxies. |
| 10 | Large-scale structure. Cosmology |

7. ASSESSMENT METHODS AND CRITERIA

| Description | Type | Final Eval. | Reassessn | % |
|---|-----------------------|-------------|-----------|---------------|
| Written examination consisting on problems | Written exam | Yes | Yes | 30,00 |
| Three Lab experiments. Deliverables will be written reports. | Laboratory evaluation | No | Yes | 40,00 |
| Short tests. There will be three of such controls after blocks 3, 6, and 9. | Others | No | No | 30,00 |
| TOTAL | | | | 100,00 |
| Observations | | | | |
| The insertion of text from internet or any other source without giving the credit to that source, will be considered plagiarism. In such case, the evaluation regulation will be applied. This applies to all written works presented. All deliverables will be sent using Moodle. No other mean will be allowed. | | | | |
| Observations for part-time students | | | | |
| Final exam is compulsory. | | | | |
| Controls are optional. If the student decides not to do them, final exam will count 60% of the total grade. | | | | |
| Schedules for lab experiments and written examinations will be flexible enough to make easier to follow the course. | | | | |

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

"Astronomy Today" E. Chaisson, S. McMillan, 2002, Prentice Hall (recurso online en BUC)

"Foundations of Astrophysics", Rayden & Peterson, 2009, Pearson

"Fundamental Astronomy" H. Karttunen, P. Kröger, H. Oja, 2007, Springer