

## Course guide

### 230686 - EC - Earth and Cosmos

**Last modified:** 14/06/2017

**Unit in charge:** Barcelona School of Telecommunications Engineering  
**Teaching unit:** 739 - TSC - Department of Signal Theory and Communications.

**Degree:** Academic year: 2017 **ECTS Credits:** 5.0  
**Languages:** English

#### LECTURER

**Coordinating lecturer:** Garcia Mateos, Jorge

**Others:** Garcia Mateos, Jorge

#### PRIOR SKILLS

English, from intermediate level onwards. Physics and Mathematics, at the level of a Bachelor's degree in Science or Engineering

#### TEACHING METHODOLOGY

#### LEARNING OBJECTIVES OF THE SUBJECT

Nowadays, many engineers (in telecommunications, electronics, mechanics, etc.) often participate in research projects related to outer space. For example, satellite communications, studies of the Earth's surface and interior using orbiting devices, interplanetary research, development of new technologies to explore the Universe at different wavelengths of the electromagnetic spectrum, etc. However, it is quite normal that the curricula, do not have room for subjects such as Geophysics, Astronomy or Astrophysics. Therefore, the main aim of this course is to fill up some of these gaps, which possess, by themselves, an intrinsic interest. Throughout this course attention will also be given to the technological developments that are contributing to rapid advances in these sciences.

#### STUDY LOAD

Type	Hours	Percentage
Hours large group	39,0	31.20
Self study	86,0	68.80

**Total learning time:** 125 h

#### CONTENTS

##### (ENG) CHAPTER 1 INTRODUCTION

**Full-or-part-time:** 1h  
Theory classes: 1h

##### (ENG) CHAPTER 2. FROM THE ORIGIN TO THE END OF THE UNIVERSE

**Full-or-part-time:** 5h  
Theory classes: 5h



**(ENG) CHAPTER 3. THE ORIGIN OF MODERN ASTRONOMY**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 4. LOOKING AT THE UNIVERSE IN ALL WAVELENGTHS**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 5. COORDINATE SYSTEMS AND TIME MEASURE**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 6. THE SOLAR SYSTEM**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 7. THE EARTH AND ITS MOON**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 8. THE OTHER SOLAR PLANETS**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 9. OUR STAR: THE SUN**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 10. STARS: DISTANT SUNS**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 11. HOW THE STARS SHINE**

**Full-or-part-time:** 3h

Theory classes: 3h



**(ENG) CHAPTER 12. THE DEATH OF STARS: STELLAR RECYCLING**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 13. BLACK HOLES: THE END OF SPACE AND TIME**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 14. THE MILKY WAY: OUR HOME IN THE UNIVERSE**

**Full-or-part-time:** 3h

Theory classes: 3h

**(ENG) CHAPTER 15. A UNIVERSE OF GALAXIES**

**Full-or-part-time:** 3h

Theory classes: 3h

## GRADING SYSTEM

Exam1: 50%

Exam 2: 50%

## BIBLIOGRAPHY

**Basic:**

- Lowrie, W. Fundamentals of geophysics. 2nd ed. Cambridge [etc.]: Cambridge University Press, 2007. ISBN 9780521675963.
- Hester, J. [et al.]. 21st century astronomy. 3rd ed. New York ; London: Norton, 2010. ISBN 9780393931983.
- Waller, W.H.; Hodge, P.W. Galaxies and the cosmic frontier. Cambridge ; London: Harvard University Press, 2003. ISBN 0674010795.
- Zeilik, M.; Gregory, S.A. Introductory astronomy & astrophysics. 4th ed. Fort Worth: Saunders College, 1998. ISBN 0030062284.