

## Course guide

# 220307 - 220307 - Radiofrequency and Communication Systems

Last modified: 02/04/2024

**Unit in charge:** Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
**Teaching unit:** 710 - EEL - Department of Electronic Engineering.

**Degree:** MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Compulsory subject).

**Academic year:** 2024 **ECTS Credits:** 5.0 **Languages:** Catalan, Spanish

### LECTURER

**Coordinating lecturer:** Ignacio Gil

**Others:**

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

#### Specific:

CE21. MUEA/MASE: Sufficient knowledge of avionics, onboard software and simulation and control techniques used in air navigation.

CE22. MUEA/MASE: Sufficient knowledge of wave propagation and problems involving ground station links.

CE23. MUEA/MASE: The ability to design radar systems and air navigation aids.

CE24. MUEA/MASE: Sufficient knowledge of aeronautical information and communication technologies.

CG06-MUEA. (ENG) Capacitat per a l'anàlisi i la resolució de problemes aeroespacials en entorns nous o desconeguts, dins de contextos amplis i complexos.

CG07-MUEA. (ENG) Competència per a planificar, projectar, gestionar i certificar els procediments, infraestructures i sistemes que suporten l'activitat aeroespacial, incloent els sistemes de navegació aèria.

CG08-MUEA. (ENG) Competència per al projecte de construccions i instal·lacions aeronàutiques i espacials, que requereixin un projecte integrat de conjunt, per la diversitat de les seves tecnologies, la seva complexitat o pels amplis coneixements tècnics necessaris.

CG09-MUEA. (ENG) Competència en totes aquelles àrees relacionades amb les tecnologies aeroportuàries, aeronàutiques o espacials que, per la seva naturalesa, no siguin exclusives d'altres branques de l'enginyeria.

CG10-MUEA. (ENG) Coneixement, comprensió i capacitat per aplicar la legislació necessària en l'exercici de la professió d'Enginyer Aeronàutic.

#### Basic:

CB06. Manage original concepts in research projects.

CB07. Student capacity to use their knowledge in new and multidisciplinary situations.

CB10. Improve self-learning capacity

### TEACHING METHODOLOGY

### LEARNING OBJECTIVES OF THE SUBJECT

### STUDY LOAD

| Type              | Hours | Percentage |
|-------------------|-------|------------|
| Self study        | 80,0  | 64.00      |
| Hours large group | 30,0  | 24.00      |
| Hours small group | 15,0  | 12.00      |

Total learning time: 125 h

## CONTENTS

### title english

**Description:**

content english

**Full-or-part-time:** 15h

Theory classes: 4h

Laboratory classes: 2h

Self study : 9h

### title english

**Description:**

content english

**Full-or-part-time:** 43h

Theory classes: 10h

Laboratory classes: 5h

Self study : 28h

### title english

**Description:**

content english

**Full-or-part-time:** 43h

Theory classes: 10h

Laboratory classes: 5h

Self study : 28h

### title english

**Description:**

content english

**Full-or-part-time:** 24h

Theory classes: 6h

Laboratory classes: 3h

Self study : 15h

## ACTIVITIES

### name english

**Full-or-part-time:** 50h

Self study: 30h

Theory classes: 20h



#### name english

**Full-or-part-time:** 35h

Self study: 25h

Theory classes: 10h

#### name english

**Full-or-part-time:** 40h

Self study: 25h

Laboratory classes: 15h

## GRADING SYSTEM

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## BIBLIOGRAPHY

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### Basic:

- Martínez Rueda, J. Sistemas eléctricos y electrónicos de las aeronaves. Madrid: Thomson Paraninfo, cop. 2007. ISBN 8428329281.
- Tooley, M.; Wyatt, D. Aircraft communications and navigation systems: principles, operation and maintenance. Amsterdam: Elsevier/Butterworth-Heinemann, 2007. ISBN 9780750681377.
- Eismín, Thomas K. Aircraft electricity and electronics. 6th ed. New York: Mc Graw-Hill, 2014. ISBN 9780071799157.
- Pozar, David M. Microwave engineering [on line]. 4th ed. Hoboken: John Wiley & Sons, 2012 [Consultation: 07/10/2022]. Available on : <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=2064708>. ISBN 9780470631553.
- Mendizabal, J.; Berenguer, R.; Meléndez, J. GPS and Galileo: dual RF front-end receiver design, fabrication, and test. Nova York: McGraw-Hill, 2009. ISBN 9780071598699.

### Complementary:

- Tomasi, W.; Mata Hernández, G. Sistemas de comunicaciones electrónicas [on line]. 4ª ed. México [etc.]: Pearson Educación, 2003 [Consultation: 03/05/2022]. Available on : [https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=3801](https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=3801). ISBN 9702603161.
- Davies, Mark. The standard handbook for aeronautical and astronautical engineers. New York: McGraw-Hill, cop. 2003. ISBN 0071362290.
- Skolnik, Merrill I. Introduction to radar systems. 3rd. ed. Boston (Mass.) [etc.]: McGraw-Hill, cop. 2001. ISBN 007118189X.