



## Course guide

### 240072 - 240072 - Electronics

**Last modified:** 27/06/2023

**Unit in charge:** Barcelona School of Industrial Engineering  
**Teaching unit:** 710 - EEL - Department of Electronic Engineering.

**Degree:** BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 7.5    **Languages:** Catalan, Spanish

#### LECTURER

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**Coordinating lecturer:** Suñé Socias, Víctor

**Others:** Busquets Monge, Sergio  
Carrasco Lopez, Juan Antonio  
Català, Roger  
Llamas, Francisco  
Moreno, Manuel  
Santos Miranda, Jose Antonio  
Tomàs, Ernest  
Vega, Dídac  
Suñé, Víctor

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

1. Knowledge of electronics fundamentals.

#### TEACHING METHODOLOGY

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#### LEARNING OBJECTIVES OF THE SUBJECT

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General objective:

Know the different types of electronic systems, their functionality, their components, and their applicability in the industry.

Specific objectives:

Know the essence of electronic systems and the different types of electronic systems: analog systems, digital systems, power electronics systems, and electronic instrumentation systems.

Know the main components used in electronic systems.

Know the behavior models of the main electronic components.

Know some analysis and synthesis techniques of electronic circuits.

Know the main analog systems and their most significant applications.

Know the main digital systems and their most significant applications.

Become familiar with the use of common instruments found in an electronics laboratory.

Know how to interpret the information from electronic component datasheets.

Know the basic vocabulary to communicate with electronic engineers.

Know how to set the specifications of electronic systems.

Know how to analyze and design simple electronic systems.



## STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	8.00
Self study	112,5	60.00
Hours large group	60,0	32.00

**Total learning time:** 187.5 h

## CONTENTS

### Course presentation

**Description:**

Course presentation

**Full-or-part-time:** 0h 30m

Theory classes: 0h 30m

### Introduccion

**Description:**

- Electric signals and systems
- Electronic systems
- Sensors and actuators
- Review of circuit theory

**Full-or-part-time:** 3h 30m

Theory classes: 3h 30m

### Devices and basic circuits

**Description:**

content english

**Full-or-part-time:** 20h

Theory classes: 20h

### Analog systems

**Description:**

content english

**Full-or-part-time:** 12h

Theory classes: 12h



## Digital systems

**Description:**

content english

**Full-or-part-time:** 20h

Theory classes: 20h

## GRADING SYSTEM

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## BIBLIOGRAPHY

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**Basic:**

- Storey, N. Electronics: A systems approach [on line]. 6th ed. Harlow: Pearson Education, 2017 [Consultation: 16/02/2022]. Available on: <https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=5186355>. ISBN 9781292114064.
- Floyd, T.L. Fundamentos de sistemas digitales [on line]. 11a ed. Madrid: Pearson Educación, 2016 [Consultation: 04/07/2018]. Available on: [http://www.ingebook.com/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=6120](http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6120). ISBN 9788490353004.
- Horowitz, Paul; Hill, Winfield. The Art of Electronics. Cambridge University Press. ISBN 9780521809269.

**Complementary:**

- Rius Vázquez, Josep. Apunts d'introducció a l'electrònica. Barcelona: CPDA-ETSEIB, 2005. ISBN 849535585X.
- Malvino, A.; Bates, D.J. Principios de electrónica [on line]. 7a ed. Madrid: McGraw-Hill, 2007 [Consultation: 12/02/2024]. Available on: [https://www.ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=4146](https://www.ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=4146). ISBN 9788448156190.
- Franco, Sergio. Design with operational amplifiers and analog integrated circuits. 3a ed. Boston: McGraw - Hill, 2001. ISBN 0071121730.
- Wakerly, John F. Diseño digital : principios y prácticas. 3a ed. México: Pearson Educación, 2001. ISBN 9701704045.
- Roth, Charles H ; Kinney, L. L.. Fundamentals of Logic Design. 7th ed. Stamford, Connecticut: Cengage Learning, 2013. ISBN 9781133628477.
- Carrasco, J. A. ; Rius, J. ; Balado, L. ; Bordonau, J. ; Lupon, E. ; Rodríguez, R.. Circuitos y sistemas digitales : problemas. Barcelona: Edicions UPC, 1996. ISBN 8483011697.