

Course guide

390337 - BIC - Bioinstrumentation and Control

Last modified: 29/06/2023

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN BIOSYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: MARCOS QUÍLEZ FIGUEROLA

Others: MARCOS QUÍLEZ FIGUEROLA

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. Bioinstrumentation, monitoring and control of biological processes.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	40,0	26.67
Hours small group	20,0	13.33
Self study	90,0	60.00

Total learning time: 150 h



CONTENTS

1. INSTRUMENTATION AND MEASUREMENT IN BIOLOGICAL PROCESSES

Description:

- 1.1 Introduction to measurement systems in biological processes
- 1.2 Sensors, electrodes and probes
- 1.3 Data acquisition and transmission in industrial environments

Related activities:

- Activity 1: Lectures in the classroom
- Activity 2: Individual written exams.
- Activity 3: Application sessions (small groups).
- Activity 4: Exercises

Full-or-part-time: 78h

Theory classes: 23h

Laboratory classes: 10h

Self study : 45h

2. CONTROL SYSTEMS IN BIOLOGICAL PROCESSES

Description:

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Full-or-part-time: 72h

Theory classes: 17h

Laboratory classes: 10h

Self study : 45h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Ogata, Katsuhiko; Dormido Canto, Sebastián; Dormido Canto, Raquel. Ingeniería de control moderna [on line]. 5a ed. Madrid: Pearson Educación, 2010 [Consultation: 16/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1259. ISBN 9788483226605.

- Johnson, Curtis D. Process control instrumentation technology [on line]. 8th ed. Upper Saddle River: Prentice Hall, 2006 [Consultation: 17/10/2023]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5174491>. ISBN 0131976699.

- Pallás Areny, Ramón. Instruments electrònics bàsics. Barcelona: Marcombo, 2008. ISBN 9788426714846.

Complementary:

- Creus Solé, Antonio. Instrumentación industrial [on line]. 7ª ed. Barcelona: Marcombo, 2005 [Consultation: 23/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=9767. ISBN 8426713610.

- Angulo Bahón, Cecilio; Raya Giner, Cristóbal. Tecnología de sistemas de control [on line]. Barcelona: Edicions UPC, 2004 [Consultation: 16/04/2020]. Available on: <http://hdl.handle.net/2099.3/36817>. ISBN 8483017784.