Course guide
390211 - BQ - Biochemistry

Last modified: 21/06/2024

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

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

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Sepulcre Sanchez, Francisco Luis

Others: Sepulcre Sanchez, Francisco Luis

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Biochemistry: bio-molecules, enzymology and metabolism.

Transversal:
2. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

TEACHING METHODOLOGY

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LEARNING OBJECTIVES OF THE SUBJECT

At the end of Biochemistry course, students should be able to solve exercises about:
-the relationship between the structure and function of biomolecules
-enzyme kinetics
-the main metabolic pathways

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

BIOMOLECULES

Description:
-Chemical Principles of Biochemistry
-Proteins
-Carbohydrates
-Lipids and membranes
-Nucleic acids

Full-or-part-time: 55h
Theory classes: 12h
Laboratory classes: 10h
Self study : 33h

ENZYMES

Description:
-Enzymatic Kinetics
-Catalytic Strategies

Full-or-part-time: 35h
Theory classes: 8h
Laboratory classes: 6h
Self study : 21h

METABOLISM

Description:
-Metabolism Energy
-Catabolic pathway
-Anabolic pathway
-Regulation of Metabolism

Full-or-part-time: 60h
Theory classes: 20h
Laboratory classes: 4h
Self study : 36h

ACTIVITIES

ACTIVITY 1: CLASSROOM LESSONS

Full-or-part-time: 98h
Self study: 60h
Theory classes: 38h

ACTIVITY 2: INDIVIDUAL ASSESSMENT TESTS

Full-or-part-time: 2h
Theory classes: 2h

ACTIVITY 3: LABORATORY EXPERIMENTS

Full-or-part-time: 35h
Self study: 21h
Laboratory classes: 14h

ACTIVITY 4: EXERCICES WITH COMPUTER

Full-or-part-time: 15h
Self study: 9h
Laboratory classes: 6h

GRADING SYSTEM

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BIBLIOGRAPHY

Basic:
- Berg, J.M. Bioquímica [on line]. 6a ed. Barcelona: Reverté, 2008 [Consultation: 26/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6547. ISBN 9788429176001.
- Mathews, Christopher K.; Ahern, Kevin G.; Van Holde, K.E. Bioquímica. 3a ed. Madrid: Pearson Educación, 2002. ISBN 8478290532.
- Voet, Donald; Voet, Judith G. Bioquímica. 3a ed. Buenos Aires: Médica Panamericana, 2006. ISBN 9500623013.
- Feduchi Canosa, Elena. Bioquímica: conceptos esenciales. 2nd ed. Madrid: Médica Panamericana, 2015. ISBN 9788498358759.

RESOURCES

Computer material:
- BioRom
- ChemSktech
- Raswin. Biomolecules visualization software

Hyperlink:
- Protein Data Bank. A protein data base www.pdb.org