Curricular Unit Form

POLITÉCNICO DE PORTALEGRE

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Escola Superior Agrária de Elvas

Updated On	2021/09/28
Curricular Year / Period	2021/22 / S1
Course	Agronomia
Curricular Unit	Bioquímica
Language(s) of Instruction	Português Inglês

ECTS/tempo de trabalho (horas)

ECTS	Total	Horas de contacto semestral								
		T	TP	PL	S	TC	E	O	OT	EC
6	160	64		32						

T - Theoretical; TP - Theoretical and practical; LP - Laboratory Practice; S - Seminar; TG - Tutorial guidance; FW - Fieldwork; T - Training; ; EC - Clinical teaching; O* - Other hours typified as Clinical Training under the Directive 77/453/EEC of June 27, adapted by Directive 2005/36/EC.

Teacher in charge (GDPR consent)

[complete name, email]

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Prerequisites

[Curricular Units that must precede and specific entry competences]

Not applicable

Learning outcomes

[Description of the overall and specific objectives] [Knowledge, skills and competences to be developed by students]

It's intended that students acquire knowledge about biological molecules, their genesis, function, interrelation and importance in maintaining the life of living beings. To depend knowledge on the properties and metabolisms of biological molecules. To acquire knowledge of the phenomene of enzymatic and non-enzymatic regulation.
Know the structure of the cell and localization of metabolic processes; Understand the importance of water and molecular interrelations; To acquire knowledge of pH, buffer solution and solubility; To know the structures, properties and mechanisms of genesis of biological molecules; Acquire concepts on biochemical energy; Relate the properties of the compounds with the methods of separation and identification; Plan and conduct the execution of lab work; Know the properties and metabolism of biological molecules; Understand the functioning of metabolisms and relate them; Acquire concepts and know regulatory factors.

Syllabus

1-Introduction to biochemistry; Biological molecules; The cellular location of metabolic processes; The water; Intermolecular connections; Solubility; pH and buffer solutions 2 - Amino acids and proteins; Peptide bond; The polypeptide chain; Secondary Structure; Tertiary and Quaternary Structure; Solubility of proteins; Protein synthesis 3 - Nucleic acids; Structure; Biosynthesis of DNA and RNA 4 - Enzymes; Enzymatic kinetics; Influence of temperature and pH on enzymatic activity; Regulation of enzymatic activity; Vitamins and coenzymes 5 - Biochemical energy; Formation of ATP; Electron conveyor system - ATP generator 6 - Glucose; Structure; Glucose metabolism; Glycolysis; Decarboxylation of pyruvic acid to acetyl-coA; Krebs Cycle; Neoglucogenesis; Regulatory factors; Via das Pentoses 7 - Lipids; Structure and classification; Oxidation of fatty acids; Biosynthesis of fatty acids 8 - Aspects of the integration of metabolisms.

Teaching methodologies (including assessment)

[Specify the types of assessment and the weights and evaluation criteria]

1 - Teaching methodologies

The laboratory classes will be based on the exposition and discussion of the contents of the program and the resolution of practical cases. Emphasis will be placed on the formulation of problems and analysis of the results, starting, whenever possible, from the implementation of protocols carried out in practical classes. It will be tried to promote a process of dialogue in which everyone participates, through their own experience and knowledge.
The following modes of evaluation are possible: Mode 1 - Continuous assessment (laboratory practices); Mode 2 - Continuous assessment followed by complementary assessment (2 written tests, protocols and practical exam. 37.5% mark of the 1st test + 37.5% mark of the 2nd test + 25% note of the protocols and practical exam); Mode 3 - Assessment by exam (Overall exam 75% written test score + 25% grade of protocols and practical exam). Prior enrollment in the evaluation exams (exam) in the System (Online Academics), with a minimum period.

2 - Period assessment

	The following modes of evaluation are possible: Mode 1 - Continuous assessment (laboratory practices); Mode 2 - Continuous assessment followed by complementary assessment (2 written tests, protocols and practical exam. 37.5% mark of the 1st test + 37.5% mark of the 2nd test + 25% note of the protocols and practical exam); **3 - Examination assessement** Assessment by exam (Overall exam 75% written test score + 25% grade of protocols and practical exam). Prior enrollment in the evaluation exams (exam) in the System (Online Academics), with a minimum period.
Bibliography	**1 - Main Bibliography** Cordeiro SardinhaRodrigues, A. I., Espinosa, F. & ÁlvarezTinaut, M. C. (2006). Las variedades de olivo en Portugal: identificación varietal y micropropagación. Cáceres. Universidad de Extremadura. Cordeiro, A. I. (2005). Estudio de la variabilidad del olivo (Olea europaea L.) en Portugal, con marcadoresde ADN. Optimizacionespara el cultivo in vitro y micropropagación del olivo. Tese doctoral. Universidade de Extremadura. Cordeiro, A. I., SanchezSevilla, J. F., AlvarezTinaut., M.C. & GomezJimenez, M. C. (2008). Molecular analysis of new accessions from Portugal and evaluation of its genetic diversity. Biologia Plantarum 52 (4): 642647 GómezJiménez, M. C., **2 - Complementary Bibliography** Brown, LeMay e Bursten. (1993). Química – A ciência central. Prentice Hall Campos, L. S. (1998). Entender a Bioquímica – O metabolismo fundamental em animais e plantas. Escolar Editora. Dias Correia, A. A. e Dias Correia J. H. R. Bioquímica Animal. 2ª Ed. Fundação Calouste Gulbenkian Halpern, M. J. (1997). Bioquímica. Lidel, edições técnicas. Weil, J. H.(1983). Bioquímica geral. Fundação Calouste Gulbenkian
Special Situations [Students with special status]	**1 - Period assessment - Students with special status** Complementary assessment (2 written tests) Students with special status (worker / student) may be exempted from practical laboratory classes, presenting a written paper). **2 - Examination assessement - Students with special status** Assessment by exam (Overall exam 75% written test score + 25% grade of protocols and practical exam). Prior enrollment in the evaluation exams (exam) in the System (Online Academics), with a minimum period. Students with special status (worker / student) may be exempted from practical laboratory classes, presenting a written paper).