

ID	3385
Curricular Unit	Introduction to Biochemistry
Regent	Cristina Paula Fidalgo de Negreiros Monteiro Bento

Learning Outcomes

This curricular unit aims to give basic instruction in biochemistry, in the perspective of the study of the molecular phenomena underlying the structure and function of the human body.

The students should be able: to identify and classify the different elements and molecules that constitute the human body and to describe their main functions; to predict some behaviours of biomolecules in water according to their chemical properties; to describe the metabolic processes that allow genetic information to be translated into an to control all body constituents and to identify possible sources of pathology; recognize the main intervenients in the processes of molecular regulation; describe metabolic processes by which the human body can obtain, store and use energy, in different environmental situations, using as a model human movement; identify reactive oxygen species and relate them to biological development in health and disease.

Syllabus

The following subjects are explored: origin of life on earth; elemental composition of the human body; macro, micro and trace elements, their main functions and nutritional sources; the cell: attributes, structure and functions; basic notions on chemistry and physics in aqueous solutions; biomolecules: structure, classification and function of carbohydrates, lipids, proteins and nucleic acids; protein synthesis from genetic information and identification and classification of sources of pathology; structure, classification and action of enzymes, hormones and neurotransmitters; bioenergetics: metabolism of carbohydrates, lipids and proteins and the physiological integration of these biochemical metabolisms in different environmental situations, using as a model human movement; oxygen reactive substances in the development of living beings and in pathology.

Evaluation

In the lectures, contents are transmitted by using the expository teaching method with the support of slides.

In the lecture-practical classes we privilege the adoption of a work group task methodology for the resolution of problems concerning subjects presented both in lecture and lecture-practical classes. Specific topics presented in lecture classes are open for discussion. Laboratory classes are also included.

Classification is obtained by performing a written exam including all subjects presented in the lecture and lecture/practical classes or by performing two written tests (mean account for 90 % of final score) and a laboratory class report (10% of final score). In the latter, the student is approved if a minimum score of 9.5 (score from 0 to 20) is obtained in both tests and in the lab report.?

Bibliography

- Laires, M.J. (2008). Bioquímica, Cruz Quebrada: Faculdade de Motricidade Humana.
- Stryer, L. (1988). Biochemistry. 3ª ed., W.H. Freeman and Company, New York.
- Quintas, A. Freire, A.P., Halpern, M.J. (2008). Bioquímica. Lisboa: Lidel.
- Devlin, T.M. (1986). Textbook of Biochemistry with Clinical Correlations. Ed. Devlin, T.M., 2ª ed., New York: John Wiley and Sons.
- Holm, J.R. (1986). Fundamentals of General Organic and Biological Chemistry. New York: John Wiley and Sons.
- Manso, C., Freire, A. & Azevedo, M. (1986). Introdução à Bioquímica Humana, 3ª ed., Lisboa: Fundação Calouste Gulbenkian.
- Newsholme, E.A. & Leech, A.R. (1983). Biochemistry for the Medical Sciences. John Wiley and Sons.
- Rawn, D.J. (1989). Bioquímica, McGraw Hill. Interamericana de España. Vol I; Vol II
- Silva, J.A.M., Geada, H.M. & Freire, A.M. (1979). Introdução à Bioquímica Médica. Lisboa: Fundação Calouste Gulbenkian.
- Weil, J. (1979). Bioquímica Geral, Lisboa: Fundação Calouste Gulbenkian.