ID	2685
Curricular Unit	Energy Metabolism and Cardiorespiratory Function
Regent	José Henrique Fuentes Gomes Pereira
Learning Outcomes	To understand and to describe the different bioenergetics transformation processes of chemical energy into mechanical energy in the skeletal muscle tissue. To identify the processes responsible for fatigue caused by bioenergetics determinants. To establish the interdependencies between bioenergetics and muscle metabolism and the cardiovascular and respiratory systems. To identify and to describe the relationship between the systematic prescription of stimuli (sports training) and the different forms of acute and chronic adaptation considering the cardiopulmonary, cardiovascular and muscular domain.
Syllabus	1 – Energy metabolism and its relation with the cardio-respiratory function. 2 – The metabolic map and energy metabolism: The citosolic high energy phosphate system (CHEP) and the regulation of the phosphorilation level. 3 – ATP regeneration mechanisms: Glycolitic pathway; Oxidative phosphorilation. 4 – Oxidative potential at the muscular level and its determinants; Quantification methods. 5 – Energy production parameters; Evaluation techniques. 6 – Levels and domains of metabolic intensity in the predominantly aerobic activities. 7 – Gas exchange kinetics. 8 – Acute and chronic adaptations of cardiovascular function. 9 – Acute and chronic adaptations of respiratory function.
Evaluation	It is a theoretical course with an eminently expository feature. For the development and explanation of the different subjects in the program, a slide power-point support is used, to which students have access. The supporting literature for each subject consists of a central book, by way of Textbook, and references specific to each subject. The evaluation consists in a written test in two ways: 1) multiple choice test; 2) essay question on selected topics, one topic per student, carried out in 24 hours, with consultation and according to rigid rules of writing – like a review article. The successful students can perform an oral examination if they wish to.
Bibliography	Kenney, W.L.; Wilmore, J.H; Costill, D.L. Physiology of Sport and Exercise. Fifth edition. HK,1012. Tipton, C.M.; Sawka, M.N; Tate, C.A; Terjung, R.T. ACSM Advanced Exercise Physiology. Lippincott Williams & Wilkins, 2006. Jones, A.M.; Poole, D.C. Oxygen uptake kinematics, in sport,exercise and medicine. Routledge. Taylor & Francis,2005.