

Course Information**Course Number/Section****BIOL 3370, section 001****Course Title****Exercise Physiology****Term****Spring 2011****Days and Times****Monday, Wednesday, 12:30-1:45 pm, SLC2.302****Professor's Contact Information****Professor****Irina Borovkov****Office phone****972 883-6895****e-mail:**irina.borovkov@utdallas.edu**Office location**[SLC2.408](#)**Office hours****by appointment****Course Pre-requisites****Pre-requisite: BIOL2312, Introduction to Modern Biology****Course Description**

BIOL3370 Exercise Physiology (3 semester hours).

Examines the operation and adaptation of human organ systems (cardiovascular, respiratory, skeletal and hormonal) during exercise. Clinical aspects of exercise, including the effects of training, nutrition, performance and ergogenic aids, are also discussed.

Pre-requisite: BIOL2312

Recommended: BIOL3455 Human Anatomy and Physiology

BIOL3456 Human Anatomy and Physiology with Lab II

Student learning Objectives/Outcomes

1. The student will learn the basic mechanisms of the physiology of the organ systems of the human body.
2. The student will learn the adaptations of the physiological mechanisms of the organ systems involved in the support of human exercise
3. The student will be expected to communicate this learning through examinations that include written essay answers to the questions related to the objectives above

Required Textbooks and Materials

Exercise Physiology: nutrition, energy, and human performance, McArdle, William Katch, Frank, Katch, Victor. 7th edition, Lippincott, Williams & Wilkins 2010

ISBN-13:978-7817-9781-8

Attendance points will be given to students missing no more than 2 lectures per semester.

Students can do two presentations per semester for 5 points each presentation. Attendance is obligatory for presentation sessions. 5 points will be taken off the total points for the students absent at presentations.

Interaction with Instructor: The instructor will communicate with students using the Announcements and Discussions tools on eLearning.

Students may send personal concerns or questions to the instructor using UTD e-mail address provided. The instructor will reply to student emails within 3 working days under normal circumstances. Students need to use their UTD account e-mail to receive an answer. Please, do not use eLearning e-mail to contact the instructor.

Student Assessments

Grading Information

You can earn a total of 320 points for assignments in this course.

A break down is presented below:

Exams – three exams 100 points each

Attendance – 20 points

Presentations – each student can do two presentations per semester (10 extra points each).

Grade criteria for the course

Points	Letter	Points	Letter
<u>Earned</u>	<u>Grade</u>	<u>Earned</u>	<u>Grade</u>
98-100%	A+	76-78%	C+
92-96%	A	72-75%	C
89-91%	A-	69-71%	C-
86-89%	B+	66-68%	D+
82-85%	B	62-65%	D
79-81%	B-	59-61%	D-

Lecture schedule

	Date	Topic		Chapters
Jan	10 M	Introduction		
	12 W	Energy Transfer in the Body	Energy, enzymes, hydrolysis, condensation	4, 5
	17 M	Holiday		
	19 W	Energy Transfer in the body	ATP, oxidative phosphorylation, glycolysis	6
	24 M	Energy transfer during exercise	Immediate energy - PCr, short term – lactic system, blood lactate threshold. Long term – aerobic: oxygen deficit, VO ₂ max, oxygen consumption during recovery, EPOC	7
	26W	Measurement of the Human Energy Expenditures (work tests)	Calorimetry, spirometry, respiratory quotient (RQ), RER	8
	31M	Human Energy expenditure during rest and physical activity	Metabolic rate, the MET. Economy of movement	9, 10
Feb	2W	Measurement of energy capacities (performance tests)	Performance tests	11
	7M	Exam I		4 - 11
	9W	Energy cost of breathing. Acid-base regulations	Ventilation, inspiration, lung volumes and capacities, lung function, pulmonary ventilation	12
	14M	Gas exchange and transport	Partial pressure, gas exchange in the lungs, transport of oxygen in the lungs	13
	16W	Dynamics of pulmonary ventilation	Ventilator control, energy demands in exercise, OBLA. Acid-base regulation	14
	21M	The cardiovascular system	The heart, arterial system, blood pressure, hypertension, the heart blood supply	15
	23W	Cardiovascular regulation and integration	Regulation of heart rate, central command, physical factors affecting the blood flow, exercise response	16
	28M	Functional capacity of the cardiovascular system	Cardiac output, stroke volume, cardiovascular drift, oxygen transport, VO ₂ max. a-vO ₂ difference, upper-body exercise	17
Mar	2W	Skeletal muscle	Levels of organization, ultrastructure, sarcomere,	18

			muscle action, muscle fiber types	
	7M	Exam II		12-18
	9W	Presentations		
	14M	Spring break		
	16W	Spring break		
	21M	No lecture		
	23W	Neural control		19
	28M	The endocrine system		20
	30W	Training for anaerobic and aerobic power	Overload, specificity, reversibility, metabolism, cardiovascular adaptations	21
Apr	4M	Training for anaerobic and aerobic power		21
	6W	Muscular strength training	1-RM, isokinetic, muscle strength, resistance training, periodization, muscle hypertrophy, DOMS	22
	13M	Special aids (ergogenic)		23
	18W	Environmental stress	Medium and high altitude, acid-base. Thermal stress	24, 25
	19M	Nutrition		1, 2
	20W	Optimal nutrition for Exercise		3
	25M	Body composition and assessment	BMI, lean-to-fat ratio, body volume, goal body weight	28
	27W	Presentations		
May	2M	Final exam		19-25, 1-3, 28

The schedule is subject to change