Course Information

Course Number/Section	**BIOL 3370, section 001**
Course Title	**Exercise Physiology**
Term	**Spring 2012**
Days and Times	**Monday, Wednesday, 1:00 -2:15 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 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 Introduction to Modern Biology

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

Physiology of Sport and Exercise W. Kenney, J. Wilmore, D. Costill, 5th edition
ISBN-13:978-0-7360-9409-2
Website: www. HumanKinetics.com

Attendance points will be given to students missing no more than 2 lectures per semester.
Students will be allowed to do two presentations per semester for 5 extra points for 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 tool 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 470 points for assignments in this course. The final grade will be calculated as a percentage of 450 points.

A break down is presented below:

Exams – four exams 100 points each

Quizzes – four quizzes, 10 points x 3 , 20 points x1 = 50 points (can drop one lowest quiz for 20 points or two for 10 points)

Attendance – 20 points

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

Exams x4	100 points each	400
Quizzes x 4	10 pts x3 +20 pts x1	50
Attendance	20 points	20
Presentations	10 points each (extra) Two presentations possible	 20
Total points		470 – 20 = 450

Grade criteria for the course

Points Earned	Letter Grade	Points Earned	Letter Grade
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	
Jan	**18 W**	**Introduction**	
	23 M	Ch. 1 Muscle	
	25W	Ch.1 Muscle and exercise	Muscle fiber types
	30M	Ch.2 Fuel for exercise	Energy substrates: carbs, fat, protein. Rate of energy production. Storing energy. Basic energy systems: ATP-PCr, glycolitic, oxidative, Krebs. Oxidation of fat. Oxidation of protein. Interaction among the energy systems
Feb	**1W**	Ch.2 Fuel for exercise	
	6M	Ch.3 Neural control	Neuron, nerve impulse, synapse, neuromuscular junction, neurotransmitters, postsynaptic response Brain, spinal cord. Sensory division. Motor division. Autonomic nervous system. Sensory-motor integration
	8W	**Q.1 Neural control** Ch.4 Hormones	Classification of hormones. Secretion and plasma concentration. Hormone actions. The endocrine glands and their actions. Hormonal regulation of metabolism during exercise. Hormonal regulation of fluid and electrolytes during exercise
	13M	**Q. 2 hormones** Ch. 5 Energy expenditure and fatique	Measuring energy expenditure: calorimetry. RER. Energy expenditures at rest and in exercise: BMR, RMR, maximal capacity for aerobic exercise. VO2max. Anaerobic effort. Oxygen deficit, EPOC. Lactate threshold. Economy of effort, energy cost
	15W	Ch. 5 Energy expenditure and fatique	Energy systems and fatique. PCr and glycogen depletion
	20M	**Exam I. Ch.1,2,5** **Muscles, energy**	
	22W	Ch.6 Heart .Vascular system, blood	
	27M	Ch.7 Respiratory (pulmonary)	
	29W	Ch. 7 Gas exchange	
Mar	**5M**	Ch. 8 Respiratory responses	Fick principle, heart rate, stroke volume, cardiac output, redistribution of blood, ventilator threshold, acid-base balance
	7W	**Exam II** **Ch. 6, 7, 8. Cardiovascular and**	

		respiratory	
	12M	Spring break	
	14W	Spring break	
	19M	Ch. 9 Principles of exercise training	Muscular strength. Muscular power. Muscular endurance. Aerobic, anaerobic power. General principles of training: individuality, specificity, reversibility, progressive overload, variation. Resistance training programs: interval training. Eccentric training, isokinetic, etc
	21W	**Presentations**	
	26M	Ch. 10 Adaptations to resistance training	Strength gains. Hypertrophy, DOMS cramps. Resistance training
	28W	Ch. 11 Adaptations to aerobic and anaerobic training	Endurance. Adaptations in muscle, metabolic adaptations. Changes in anaerobic power.
Apr	**2M**	Ch. 11 Adaptations to aerobic and anaerobic training	
	4W	Ch. 12, 13 Hot/cold, altitude	
	9M	**Exam III, Ch. 9, 10, 11, Adaptations to exercise**	
	11W	**Q3. Ch12, 13** Presentations	
	16M	Ch. 14 Training for sports	Overtraining, tapering, detraining
	18W	Ch. 15 Body composition and nutrition	Glycemic index, carb intake, fat consumption, vitamins, ions, water balance, diet, glycogen loading
	23M	Ch. 16 Ergogenic aids Extra: Genetics	
	25W	Ch. 20 Prescription of exercise for health and fitness	Medical evaluation, graded exercise, exercise prescription: mode, frequency, duration, intensity. Heart rate, metabolic equivalent, ratings of perceived exertion
	30M	**Q4. Genetics** Presentations	
May	**2W**	**Presentations**	
	7M	**Final exam Ch. 14, 15, 16, 20**	

The schedule is subject to change