# Hashemite University School of Physical Education and Sport Sciences COURSE SYLLABUS Sport Biochemistry (110601228) 3 Credit Hours (3 contact hours) Fall 2020 Semester Section 1

#### Instructor: Mo'ath Bataineh, PhD

Class times: Sunday, Tuesday, Thursday 10:00-10:50am. Online

Office Hours: Sunday, Tuesday 12:15-11:15pm. Other times by appointment.

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#### **Required Text:**

• Donald MacLaren, and James Morton 2011, **Biochemistry for Sport and Exercise Metabolism**, 1<sup>st</sup> Edition, Wiley.

#### **Suggested Reading:**

- Houston, M.E. 2006, *Biochemistry Primer for Exercise Science*, 3<sup>rd</sup> Edition, Champaign IL: Human Kinetics.
- Houston, M.E. 2001, *Biochemistry Primer for Exercise Science*, 2<sup>nd</sup> Edition, Champaign IL: Human Kinetics.
- Mougios, Vassilis. 2006, *Exercise biochemistry*, Champaign IL: Human Kinetics.
- Hargreaves, M., and Thompson, M. 1999, *Biochemistry of exercise X*, Champaign IL: Human Kinetics.

**Course Description:** Examines the metabolic and biochemical basics and adaptation of the body in response to physical activity and training; the subcellular and enzymatic regulation and integration during exercise. Focus is also given to substrate metabolism, bioenergetics, hormonal action and nutritional influences as related to exercise.

#### **Course Learning Outcomes:**

Upon the completion of the supervised practice, the student will be able to:	Covered in:	Assessment Method
1. Discussion of the basic physical and biochemical concepts	Units 1&3	- Quizzes - Exams
2. Discussion of the biochemical basis of metabolism and proceeding through levels of increasing complexity.	Units4-6	- Quizzes - Exams

3. Discussion of the role of energy sources and metabolic regulation in physical performance and fatigue.	Units 7-9	- Quizzes - Exams
4. Apply appropriate knowledge in understanding Sport biochemistry	Units 1-9	-Term Project Report

**Grading Scale:** 

Letter Grade	<b>Points Earned</b>
A+	$\geq$ 90
А	86-89
A-	82-85
B+	78-81
В	74-77
В-	70-73
C+	66-69
С	62-65
C-	58-61
D+	54-57
D	50-53
F	$\leq$ 49

Grading and Evaluation:	
Quizzes (2)	<b>20%</b> ( <b>10% each</b> )
Mid Term	40%
Final Exam	40%

## **Course Content:**

- Energy sources for muscular activity
- Biochemical concepts
  - Organization of matter
  - Chemical bonding
  - Chemical reactions, ATP and energy
  - Water
  - Acid-base balance
- Proteins
- Carbohydrates
- Lipids
- Principles of metabolic regulation
- High-intensity exercise
- Endurance exercise
- High-intensity intermittent exercise

### **Class Schedule:**

Week	Date	TOPIC	Student Activities
1		Unit 1: Energy sources for muscular activity	Class discussion:
2 & 3		Unit 3: Biochemical concepts	Class discussion:
4-6		Unit 4: Proteins	Reading Assignment
5	Nov. 8th	Quiz #1	Unit 3
7-9		Unit 5: Carbohydrates	Class discussion:
9	Nov. 29th	Mid-Term Exam	Units 1, 3, 4
10		Unit 6: Lipids	Class discussion:
10	Dec. 8th	Quiz #2	Unit 5
11		Unit 7: Principles of metabolic regulation	Class discussion:
12		Unit 8: High-intensity exercise	Class Discussion:
12		Unit 9: Endurance exercise	Class discussion: Reading Assignment:
13-15		FINAL EXAM	Units 1, 3-9

#### **Exams:**

• Exam material will be taken from lectures and text book.

## **Points of Importance:**

- Tardiness or absence in the classroom will not be permitted unless proper documentation is shown. A **1 POINT DEDUCTION** will occur each time this happens
- Short exams will be held without prior notice at the beginning of class time and the score will be either +1 or -1.
- No make-up exams will be offered without proper documentation