DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COURSE SYLLABUS

EE 372: Physiology for Biomedical Engineers

COURSE TITLE	*CODE & NUMBER*	*SUBJECT AREA*	Contact Hours			Credit Units
			Th.	*Pr.*	*Tr.*	
Physiology for Biomedical Engineers	**EE372**	Engineering	3	0	0	3
Pre-requisites:	BIO321					
Course Role in Curriculum *(Required/Elective):*	Required course					
Catalogue Description: Body environment, fluids and compartments, digestive system. Metabolism, energetics of glucose metabolism. Respiratory system and artificial respiration. Cardiovascular system and its regulatory mechanism, hemodynamics. Metabolism and body temperature regulation. Endocrinology, reproductive system and renal physiology.						

***Textbooks*:**
(Author, Title, Pub., year)

1. Human Physiology: From Cells to Systems, 9th Edition by Lauralee Sherwood, CENGAGE Learning Custom Publishing (2016), ISBN-13: 978-1285866932.
2. Quantitative Human Physiology: An Introduction (Academic Press) - Hardcover (2012) by Joseph Feher, USA. ISBN: 978-0-12-382163-8

***Supplemental Materials*:**

- ***References:***
  - Seeley's Essentials of Anatomy & Physiology (McGraw-Hill) – (2020) by Cinnamon VanPutte and Jennifer Regan and Andrew Russo and Rod Seeley, 12th edition, ISBN10: 1260172198
  - Physiology (BRS - Board Review Series) by Linda S. Costanzo, Fifth Edition (Lippincott Williams & Wilkins, 2011)
- ***Web Resources:***
  - http://highered.mcgraw-hill.com/sites/0072507470/student_view0/
  - http://www.biopac.com/
  - http://www.getbodysmart.com/
  - http://people.eku.edu/ritchisong/301syl.html
- Lecture Notes and PPTs

***Course Learning Outcomes*:**

By the completion of the course the students should be able to:

1. Be able to apply basic physical, mathematical and chemical/biochemical principles of concentration and kinetics in physiological systems.
2. Be able to calculate various variables affecting physiological systems.
3. Develop a vocabulary of appropriate terminologies related to anatomy and physiology.
4. Describe physiological processes of all body systems at length.
5. Integrate knowledge of the major physiological systems to understand homeostasis.
6. Design simple experiments on human subjects/experimental animals/tissues to observe phenomena, record and analyze data, and infer from data.

Topics to be Covered:		***Duration in Weeks***
1.	Cells and Physico-chemical foundations	2.5
2.	Senses and nervous system physiology and anatomy	2.5
3.	Skeletal and muscular system physiology and anatomy	2
4.	Cardiovascular physiology and anatomy	2
5.	Respiratory physiology and anatomy	2
6.	Renal physiology and body fluid compartments	1.5
7.	Gastrointestinal physiology and anatomy	1.5
8.	Endocrine & Reproductive physiology and anatomy	2

Key Student Outcomes addressed by the course: (Put a ✓ sign)

(1)	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	
(2)	An ability to apply the engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	
(3)	An ability to communicate effectively with a range of audiences	✓
(4)	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
(5)	An ability to function effectively on a team whose members together provide leadership, creates a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	✓
(6)	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	✓
(7)	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

Instructor or course coordinator: Prof. Mohammad Asif Hussain
Last updated: Spring 2020