BIOL 1210
Human Biology and Disease

Course Description and Learning Objectives

How is a milk allergy different from lactose intolerance? What is the relationship of diabetes mellitus to the pancreas (an organ), insulin (a hormone) and hyperglycemia (a high concentration of glucose in blood plasma)? What is the difference between Type I and Type II diabetes mellitus?

These and other health-related questions are faced by everyone in modern society. To answer these questions, a knowledge of human biology is fundamental. This course will enable you to develop the competence and confidence to make informed lifestyle choices and to actively participate in your own and your families' healthcare. We will also examine the role of contemplative practices in this course as an example of how mindfulness tools may facilitate good health by increasing attention for effective learning and promoting mind-body awareness for stress management.

By the end of this course, my goal is for all students to be able to:

1. accurately identify the organs composing physiological systems and the cells composing the organs (foundational knowledge)
2. critically analyze the physiological effects of disease processes through application of fundamental principles in specific organs/organ systems
3. gain confidence in accessing and interpreting healthcare information to make informed decisions that may lead to behavioral lifestyle choices and informed responses to healthcare challenges
4. utilize mindfulness practices to increase attention, learning and to reduce anxiety

Instructor information

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T 10-11 am Th 10:30-11:30 am in Munford House/IRC
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Assessement of Learning

1. attendance, class participation, daily collaborative work (40%)
Each class will begin with the invitation to be present and focus attention using a contemplative practice. Attendance and participation are highly valued. Thank you for coming to class prepared – having read the material, completed any homework assignment and ready to share your work and learning with others.

During class students will practice sharing knowledge acquired prior to class and add to that knowledge as we a construct a greater understanding of human biology. Homework activities (worksheets, practice quiz, writing prompts) may also be shared during an in-class activity. The goal is to master a basic knowledge of human biology will then may be applied to better understand disease processes.

Evidence of attendance will be collected at the end of **each** class and may include:

individual and/or group notecard – students will respond to a prompt

individual and/or group activity 'product' – students will complete an assignment at home and come to class prepared to share their understanding with one another to facilitate understanding of fundamental human biology or predict/analyze disease process in a physiological system

individual and/or group practice quiz – students will complete a practice quiz at home, bring it to class and may be asked to work in a group to come to consensus on responses

2. quizzes –2 (10%)

Students will complete a summative quiz, same format as the practice quiz, independently at home. Outside resources ("open book open note") are permitted.

3. papers – authentic assignments – 2 (30%)

Students will respond to a prompt, example below,

Inflammation

Your roommate has returned from Student Health with a diagnosis of bacterial bronchitis. Your suitemate returns an hour later with a diagnosis of viral sinusitis. You recognize the opportunity to practice identification of respiratory system anatomy and to explain the inflammatory process as it applies to the bronchi to your roommate or the sinuses of your suitemate!

You understand that the bronchi and the nasal sinuses are 'tubes' internal to the body that are really spaces "outside" the body proper and thus are fairly vulnerable to infectious pathogens in

the environment. Both disorders are infections that lead to inflammation. The infectious agents are different and the locations are different, but the physiological process is the same!

Explain, by listing or by sketching and labeling a diagram, the respiratory system organs (the 'tubes') to your roommate/suitemate the pathway of air flow from the external environment to the alveoli. Propose how the infectious agent entered the respiratory system and show them specifically where it lodged.

Apply the basic concepts of the inflammatory response to explain the symptoms that your roommate or suitemate are experiencing due to the infection.

4. cumulative final exam (20%)

quiz – same format as practice and quiz
final paper - same format as paper authentic assignment

Evaluation of Learning - Grading

Attendance, participation, collaboration	40%
Quizzes	10%
Papers	30%
Final Exam	20%

Learning Resources

Collab – resources, assignments (summative quiz and paper), gradebook
email
Facebook – for announcements, questions – if class interest
textbook and/or online resources

Course Schedule – very partial

week of	**class topic**	
Aug 27-29	invitation to learn mindfulness - breathing	
Sept 1	asthma respiratory system ventilation/breathing external respiration	read: asthma do: *1. respiratory system anatomy* *2. practice quiz*
Sept 8	blood flow & blood pressure blood vessels - arteries, arterioles, capillaries, venules, veins vasoconstriction & vasodilation capillary exchange	read: blood vessels do: *1. another practice quiz* *2. asthma paragraphs*

Sept 15	-itis disorders : inflammation the immune system red, warm, swelling, pain	read: inflammation do: *1. practice quiz* *2. bronchitis paragraphs*
Sept 22	heart blood flow through the atria & ventricles heart murmurs	read: blood flow through heart do: *1. heart blood flow*
Sept 29	heart attack or myocardial infarction? heart heart rate – pacemaker cells, ECG stroke volume	read: heart – pacemakers do: *1. practice quiz(2) 2. send link to share.*
Oct 6 paper due F 10/10	blood clotting/coagulation blood types/transfusion immunity – antigen-antibody	read: erythrocytes, thrombocytes, leukocytes, plasma do: *1. blood typing*
Oct 13 (2 days) quiz due F 10/17	transplant rejection, autoimmune diseases, vaccination	read: blood typing and transfusions *1. blood transfusion paper*
Oct 20	multiple sclerosis, paralysis action potentials in neurons Na^+ in (Ca^{2+} in) K^+ out	
Oct 27		
Nov 3	muscular dystrophy, cramps action potentials in skeletal muscle	
Nov 10		
Nov 17	celiac disease, Crohn's disease gastrointestinal system	
Nov 24 (1 day) paper due M 11/24		
Dec 1	kidney stones, kidney dialysis urinary system	
T Dec 16 2-5 pm	cumulative final exam	paper due in class final exam