2024

BIOM 3110: Medical Physiology (Syllabus)

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University of Memphis

Medical Physiology BIOM 3110

Spring, 2024

Tu/Th 1:00-2:25 ES 324

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ET 303C

DESCRIPTION: In this course, you should learn some of the basic principles of human physiology and how these are applied in medicine and biomedical engineering. Our approach will be to explore physiological principles using appropriate mathematical and engineering models to construct an understanding of how the body works as an integrated system. This course should be of interest to students planning a career in medicine or biomedical engineering.

GOALS: The goals that you should work towards are;

1. To demonstrate your understanding of fundamental concepts in human physiology;
2. To apply fundamental concepts in human physiology to solve medical and biomedical problems.

TEXT: *Ganong's Review of Medical Physiology*, 26th edition ISBN: 978-1-26-012241-1

EVALUATION: There will be four examinations and one comprehensive final examination during the semester. Each of these will count 200 points. The total number of points you attained on these exams determines your final grade.

Grade	Total points
A- / A	900-1000
B- / B / B+	800-899
C- / C / C+	700-799
D / D+	600-699
F	below 600

Eighty percent of your final exam will be comprehensive in nature while twenty percent will come from questions that you missed on previous exams. If you correctly answer the question(s) that you missed previously, you will not only receive full credit for the problem on the final exam, but you will also receive back all credit you lost for that problem on the original exam. Thus, it is possible for you to recover up to 40 points (i.e., 20% of 200 points) on the final exam.

POLICIES: My expectation is that you will attend all classes unless directed otherwise. There will be regular in-class case discussions and problem sets and I expect that you will complete these assignments in a timely manner. None of these assignments are graded; they are to help you learn. These assignments are the minimum I believe is necessary for an average student to learn to apply scientific concepts to medical problems. If you are unable to attend a class, it is your responsibility to obtain all material discussed and assignments given. You are permitted to make an audio recording of the lecture only if you receive my permission beforehand. This is for your personal use only and is never to be posted online, sold or disseminated. The same is true (i.e., posting online, selling or disseminating) for any PowerPoint presentations or YouTube videos. Cell phones should not be used during class (e.g., no texting or talking).

You will be allowed to make up a missed exam *only* with an excused absence. Normally, these reasons would include medical emergencies, a death in your family, or required University of Memphis event (e.g., athletic team travel). If possible, please let me know ahead of time if you are not able to take an exam at the scheduled time so that we can arrange another time for you to take it. It is your responsibility to coordinate with me when you take the make-up exam and respond promptly to all of my emails. If the absence is not excused, or if you fail to respond promptly to take the make-up exam, you will receive zero points for the exam. Your work on exams and any other work specified must be pledged

to be your own and free of all examples of academic misconduct. This includes using any outside sources, notes, computers, internet, etc. and you may not wear smart watches or access your cellphone during the exam. Instances of cheating may result in zero points for the exam (i.e., summary discipline) or referral to the Academic Integrity Committee for investigation and possible sanctions. You are also required to turn in your first three exams no later than when the fourth exam is scheduled so that I may select questions for the individualized portion of your final exam. If you are unable to locate one or more of your previous exams and turn them in at this time, you will not be eligible to make back all possible points on your final exam. For each exam you are unable to return to me, you will lose the ability to recover 10 points and I will ask you a question from a previous exam you answered correctly.

Any student who may need class or test accommodation based on the impact of a disability is encouraged to contact Disability Resources for Students (DRS) at 110 Wilder Tower, 678-2880. DRS coordinates accommodations for students with documented disabilities.

SCHEDULE OF CLASSES

Day	Date	Topic	Chapter
Tu	1/16	Class introduction, expectations Biomolecules and cellular structure and function	1, 2
Th	1/18	Transport, cellular communication, metabolism	1, 2
Tu	1/23	Integumentary system; musculoskeletal system	5
Th	1/25	Mechanics of motion, energetics, feedback control	12
Tu	1/30	Hematological: anemia, coagulation, ABO	31
Th	2/1	Immunological: innate and adaptive	3
Tu	2/6	**EXAM 1**	
Th	2/8	Pulmonary: ventilation, respiration	34-35
Tu	2/13	Pulmonary: compliance, perfusion	34-35
Th	2/15	Cardiac: Frank Starling, cardiac output	29-30
Tu	2/20	Cardiac: electrical	29-30
Th	2/22	Cardiac: blood flow, lymph	29-30
Tu	2/27	**EXAM 2**	
Th	2/29	Gastrointestinal: smooth muscle, functions	25-28
Tu	3/12	Gastrointestinal: digestion, absorption	25-28
Th	3/14	Gastrointestinal: synthetic	25-28
Tu	3/19	Renal: nephron structure and function	37-39
Th	3/21	Renal: acid-base balance	37-39
Tu	3/26	**EXAM 3**	
Th	3/28	Nervous: action potentials, CNS	4, 6, 8, 12
Tu	4/2	Nervous: action potentials, CNS	15
Th	4/4	Nervous: PNS somatic and autonomic	13
Tu	4/9	Endocrine: hypothalamus, pituitary	16-18
Th	4/11	Endocrine: thyroid, parathyroid, adrenal	20-21
Tu	4/16	Endocrine: adrenal, pancreas	19, 24
Th	4/18	Endocrine: reproductive	22-23
Tu	4/23	**EXAM 4**	
Th	5/2	**FINAL EXAM (10:30am-12:30pm)**	