Physiological Basis of Disease, Fall 2013 (3 Credits)

Mondays, 1:00 – 2:30 pm
Thursdays, 1:00 – 2:30 pm
Program 761 Course 600
Room: V14

Course Director:

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Participating Faculty Members:

Drs. Fan, Ferrante, Fondell, Gow, Jacinto, Riley, Sesti, Tsai, Tamasi, Weiss, Zachow,

Suggested Textbook:

Barrett: Ganong's Review of Medical Physiology, 24th ed., 2012, **free online version available at** http://www.accessmedicine.com/resourceTOC.aspx?resourceID=741. Students can directly access the book at this link through a network on campus. Off campus, they can access the book through the website of RWJMS libraries at http://libraries.RBHS.rutgers.edu/rwjlbweb/ebooks-subject.htm#physiology (you will be asked to provide Rutgers RWJMS credentials before given access).

Robbins Pathologic Basis of Disease/Rubin's Pathology: available at ARC

Guyton, Medical Physiology, available at ARC

Harrisons Principles of Internal Medicine: available at ARC

Specific Lecture Texts:

Pulmonary physiology, Dr. Gow: *West: Respiratory Physiology,* available at ARC

Cardiovascular (lectures not taken from this monograph, but good review): *Berne and Levy,* available at ARC

Gastrointestinal Physiology, Dr. Fan & Jacinto: *1. Gastrointestinal Physiology, by Leonard R. Johnson, 7th ed. 2. Berne & Levy Physiology, 6th ed, by Koeppen and Stanton (also for cardiovascular).* Both are available at ARC.

Renal Physiology, Dr. Zachow: *Renal Physiology, Vander's Renal Physiology, 7th Edition: http://www.accessmedicine.com/resourceTOC.aspx?resourceID=57.*

Review books/practice questions (strongly recommended):

Linda Costanzo, Physiology: Cases and Problems, 3rd ed [BRS], a limited number of copies are available at Rutgers RWJMS Academic Resource Center (ARC); Excellent review through clinical cases.

Guyton & Hall Physiology Review, a limited number of copies are available at Rutgers RWJMS Academic Resource Center (ARC); the book has many practice questions including case-based questions.

Course Description and Goals: This is a lecture/discussion format course that covers systems physiology and relates these concepts to disease. The course is divided into organ systems starting with the normal physiology that sets the foundation for understanding the pathophysiology of each organ system. Included are discussions of the cardiovascular, skeletal muscle, pulmonary, renal, gastrointestinal, bone, and endocrine systems in the context of normal function, as well as the effect and consequences of representative pathophysiological conditions within these systems. The faculty will give a total of 24 formal lectures. The M.S. students are not responsible for denoted pathology lectures, but are still required to attend. Ph.D. students will be responsible for all lectures. There will be two mid-term examinations and a final examination that will only cover the third and last block. Each exam will count for about one third of the total grade. M.S. students will be given multiple-choice tests while the Ph.D. students will be given essay exams.

This course will have many lecturers due to the wide array of topics to be covered so you will encounter different lecturing styles, but each lecturer is an expert in the topic they are covering. **Because of the nature of the material, no one text is used for this course.** Therefore, the online book listed above is highly recommended for general reference because it is free. For many medical students, review books such as Costanzo, and Guyton and Hall are valued. In some cases there are no textbooks that cover both normal physiology and pathophysiology, so lecturers may provide some critical papers. Some professors will provide sample test questions, but this is in general a bad way to learn material because emphasis is placed on concepts as opposed to memorization, and understanding of the basic concepts rather than memorization will better prepare you for the tests. These questions should only be used as a very general guide as to the type of questions asked on tests.

Critical Course Goals and Objectives:

1. Explain of the integrative biology of organ systems.
2. Describe principles of physiological systems common to all organs: for example, understanding of Ohms's law (Flow = Pressure head/Resistance, or I (current) = voltage/resistance) will be useful for all lectures.
3. Describe the feedback controls and pathways underlying all physiological systems.
4. Prepare students for first year medical school: much of course lectures overlap with the physiology components of medical students' M1 curriculum at Rutgers RWJMS.
5. Use normal physiology knowledge to predict pathological processes.
6. Describe how pathological processes disrupt normal function.
7. Apply a basic understanding in physics and chemistry in the context of human physiology.

Physiological Basis of Disease, Fall 2013 Schedule
(All lectures are to be held in V10. Exams will be held in the East Lecture Hall or Main Auditorium)

Week	Lecture	Date (M or T)	Lecturer	Subject	Note
1	1	09/05 T	Ferrante	Membrane potential and excitability	10 min preview of course
2	2	09/09 M	Weiss	CV: Cardiac function, cardiac output, venous return	
	3	09/12 T	Weiss	CV: Microcirculation	
3	4	09/16 M	Sesti	CV: Electrical activity, ECG	
	5	09/19 T	Weiss	CV: Acute myocardial ischemia, heart failure	
4	6	09/23 M	Gow	Pulmonary mechanics and circulation	
	7	09/26 T	Gow	Oxygen/CO_2 exchange, V/Q balance, Respiratory control of pH	
5	8	09/30 M	Riley	Hypoxemia, V/Q disorder, pulmonary disease	**MS students will not be tested on the contents of this lecture.**
		10/03 T		Self study, no lecture	
6		10/07 M		**Exam 1 (East Lecture Hall?)**	
	9	10/10 T	Ferrante	Skeletal muscle function and pathophysiology of muscle	
7	10	10/14 M	Zachow	Renal: Body fluid balance, GFR, renin-angiotensin-aldosterone system	
	11	10/17 T	Zachow	Renal: Hormonal regulation of renal Na^+ and H_2O handling: aldosterone, AVP and AII; renal control of blood pressure; acid-base	
8	12	10/21 M	Zachow	Renal glucose handling and diabetic kidney disease; integrated renal-cardiovascular function	
	13	10/24 T	Zachow	Applied renal pathophysiology cases	**MS students will not be tested on the contents of this lecture.**
9	14	10/28 M	Fan	GI: overview, motility	
	15	10/31 T	Fan	GI: secretion	
10	16	11/04 M	Jacinto	GI: digestion/absorption	
	16	11/07 T		Self study, no lecture	
		11/11 M		**Exam 2 (Main Auditorium)**	

11	17	11/14 T	Jacinto	Endocrine pancreas	
	18	11/18 M	Tsai	Endocrine, general neuroendocrine	
		11/21 T	Fondell	Thyroid	
12	19	11/25 M	Fondell	Adrenals	
	20	11/28 T		**Thanksgiving, no class**	
13	21	12/02 M	Tsai	Male reproductive system	
	22	12/05 T	Zachow	Female reproductive endocrinology (1)	
14	23	12/09 M	Zachow	Female reproductive endocrinology (2)	
	24	12/12 T	Tamasi	Bone physiology and pathology	
15		12/16 M		Self study, no lecture	
		12/19 T		**Final Exam (Main Auditorium)**	

Note: Fall semester starts on 9/3 and ends on 12/23; last day of classes: 12/12; Final exam day: 12/19

Contact Information for Physiological Basis of Disease Lecturers

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