

Autonomic Physiology

BBB 269-001, Fall 2009

Course Instructor:

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B-2 Solomon

<u>DATE</u>	<u>TOPICS</u>	<u>READINGS</u>
9/10	Overview of Course Drug Administration Review of Synaptic Transmission	Chp. 6
9/15	Basic Principles in Pharmacology	Chp. 10
9/17	Acetylcholine Receptor Function and Pharmacology	Chp. 11
9/22	Acetylcholine Continued	Chp. 11
9/24	Catecholamines and Indoleamines Receptor Function and Pharmacology of Norepinephrine, Epinephrine and Serotonin	Chp. 12 Chp. 13
9/29	CNS Development and Structures	Chp. 25 p. 437-442, 449-457
10/1	Autonomic Nervous System I: Overview and Anatomy II: Sympathetic Nervous System The "Fight or Flight" Response	Rhoades, Chp. 10
10/6	Autonomic Nervous System III: Parasympathetic Nervous System The "Rest and Digest" Response	Rhoades, Chp. 10
10/8	Autonomic Nervous System Reflexes I: Urination II: Defecation III: Sensory Spinal Reflexes	Rhoades, Chp. 10
10/13	Autonomic Regulatory Systems I: Cardiovascular System II: Thermoregulation III: Respiratory System	
10/15	Midterm Exam	
10/20	Society for Neuroscience Meeting, no class	

10/22	Pituitary Function and Neuroendocrinology I: Adrenal Hormones, Gonadotropins	Rhoades, Chp. 13
10/27	Pituitary Function and Neuroendocrinology II: Prolactin, Growth Hormone	Rhoades, Chp. 13
10/29	Pituitary Function and Neuroendocrinology III: Thyroid Hormone, Posterior Pituitary Hormones	Rhoades, Chp. 13
11/3	Regulation of Body Fluids- Thirst I: Vasopressin	Fluharty (Chp. 8)
11/5	Regulation of Body Fluids- Thirst II: Angiotensin II	Fluharty (Chp. 8)
11/10	Regulation of Body Fluids- Salt Appetite I: Mineralocorticoids II: Angiotensin II	Daniels paper
11/12	Enteric Nervous System I: Basic Anatomy and Physiology	Janig, Chp. 5
11/17	Enteric Nervous System II: Function and Regulation by Higher Brain Centers	Janig, Chp. 5
11/19	Midterm Exam	
11/24	Regulation of Feeding Behavior Ingestive Neuropeptides	Cummings paper
12/1	Regulation of Feeding Behavior Ingestive Neuropeptides	Cummings paper
12/3	Pain I: Substance P	Chp. 57
12/8	Pain II: Opioids in pain management	Chp. 57
12/10	Review	

Cumulative final exam has been scheduled for Tuesday, December 22, from 12-2 p.m.

Autonomic Physiology is lecture course is designed to introduce the student to the functioning of the autonomic nervous system (ANS), which is critically involved in the maintenance of body homeostasis through regulation of behavior and physiology. The course will begin with a review the basic anatomy and physiology of the ANS including the sympathetic, parasympathetic and enteric divisions. The mechanisms by which the ANS regulates peripheral tissues will be discussed, including reflex and regulatory functions, as will the effect of drugs which modulate ANS activity. The role of the ANS in regulating behavior will be addressed in the context of thirst, salt appetite and food intake. Finally, the course will cover the result of over-activation of the sympathetic nervous system as manifested in chronic stress. This course utilizes the Blackboard website. Please visit: <https://courseweb.library.upenn.edu/> early in the semester to make sure you can access the course site.

Course grades will be based on two midterm exams (30% each) and one cumulative final exam (40%).

Exams:

The midterm and final exams will consist of multiple choice and open-ended questions designed to assess basic knowledge of the concepts discussed in class as well as the ability to integrate information from different lectures.

Missed exams will only be given at a later date with an authorized university absence. If you wish to submit an exam for a re-grade, you should do so in writing within *one week* of receiving the graded exam. If you submit an exam for a re-grade, the entire exam will be re-graded and your resulting score may higher or lower than the original grade. A fraction of exams are photocopied before being returned to the students. If an exam is found to have been altered before submission for re-grading, the student will be reported to the Office for Student Conduct.

Reading Assignments:

Readings will be available through the course BlackBoard website and will include chapters from the following sources:

Basic Neurochemistry: Molecular, Cellular and Medical Aspects, 7th edition / Editor-in-chief George J. Siegel; editors R. Wayne Albers, Scott T. Brady, Donald L. Price (Elsevier, 2006).

The Integrative Action of the Autonomic Nervous System by Wilfrid Janig (Cambridge University Press, 2006).

Human Physiology, 4th edition, by Rhoades & Pflanzler (Thomson/Brooks Cole, 2003).

Hormones, Brain and Behavior, Volume 1, Chapter 8, Neuroendocrinology of Body Fluid Homeostasis, by Steven J. Fluharty, Elsevier Science (USA) 2002.

Daniels, Derek, and Steven J Fluharty. *Physiology & Behavior* 81.2 (2004):319-37.

Cummings, David E, and JoostOverduin. "Gastrointestinal regulation of food intake." *The journal of clinical investigation* 117.1 (2007):13-23.