SYLLABUS DETAILS
HOWARD UNIVERSITY
GENERAL ENDOCRINOLOGY I
82316-441-01, 83988-441-01
FALL SEMESTER, 2005

DEPARTMENT OF BIOLOGY

INSTRUCTORS: Vincent W. Hollis, jr., Ph.D., Office hours (Room 241), Tuesday and Thursday 3:00 to 3:30 PM, 5:00 to 6:00 PM, and by appointment. Office phone (202) 806-6687; E-mail vhollis@howard.edu

William A. Sadler, Ph.D., Office hours (Room 228), as posted on his office door. Office phone (202) 806-6954; Email - wsadler@howard.edu

CREDITS: 3

TIME: T, Th 3:40 PM to 5:00PM

TEXT: Textbook of Endocrine Physiology 5th Edition
Edited by James E. Griffin and Sergio R. Ojeda
Oxford University Press, Cary, NC 27513

OBJECTIVES OF THE COURSE

To look at the vertebrate endocrine system in a systematic manner, beginning with a discussion of the chemistry, function and physiological roles of the hormones. Secondly, to study the mechanism of action of these chemical messengers, and hormones and how they are involved in the control of physiological processes.

EVALUATION SYSTEM

A. Undergraduate Students

Students are evaluated on the results of full period examinations, usually five or six including the final. Adding the results of all but the lowest grade and then dividing by that number to obtain the final average. Example: If 5 exams are taken and the student's grades are 70, 85, 80, 90, and 85 the grade of 70 will be dropped and the remaining scores added and averaged.

Examinations will be given one week after the completion of a given topic. Examinations are a full period. MAKE-UP EXAMINATIONS WILL NOT BE GIVEN. STUDENTS WILL HAVE TO USE THEIR DROP EXAMINATION FOR ANY EXAMINATION MISSED.

B. Graduate Students
Evaluated in the same way as the undergraduate students except the average of their examination scores represent only 80% of their final grade. The remaining 20% are derived from a term paper that is due during the reading period. Instructions for the term paper will be given to all registered graduate students.

**GRADING SYSTEM**

- **A** = 90 and above
- **B** = 80 - 89
- **C** = 70 - 79
- **D** = 60 - 69
- **F** = less than 60

**TOPICS AND SUBTOPICS**

I. Introduction to Endocrinology

Scope and specific aims of the course, definition of a hormone, chemical nature of hormones, biosynthesis and storage of hormones, regulation of hormone secretion, mechanism of hormone action, membrane receptors, assessment of hormones, etc. (Dr. Hollis)

Reading assignment: Chapters: 1, 2 (to pg. 27), 3, and 4

II. Hormones of the Hypothalamus, Anterior Pituitary, and Posterior Pituitary Glands

The anatomy of the hypothalamus, adenohypophysis, and neurohypophysis will be covered, as well as the hypothalamus’s control of adenohypophysis functions. Hormones of the hypothalamus, adenohypophysis, neurohypophysis and other neuropeptides will also be discussed. (Dr. Hollis)

Reading assignment: Chapters: 6 and 7

III. Cell Growth Factors

Somatomedins, and other putative growth factors which affect the growth proliferation, and differentiation of specific cell types, i.e., nerve growth factors, platelet derived growth factor, etc. (Dr. Sadler)

Reading assignment: Chapter: 12

IV. The Parathyroid Gland, Vitamin D and Calcitonin

The anatomy, biosynthesis and metabolism of the parathyroid hormone will be discussed. The physiological effects of the parathyroid hormone, parathyroidectomy, and the mechanism of hormone action will also be covered as well as the hormone calcitonin and its actions. (Dr. Sadler)
Reading assignment: Chapter: 15

V. Pancreas -- Insulin, Glucagon and other Peptide Hormones

The anatomy of the pancreatic islets, the chemistry of pancreatic hormones, the regulation of their secretion, the mechanism of action of pancreatic hormones and other related factors are covered. The effects of insulin and glucagon on carbohydrate, lipid and protein metabolism will also be discussed. (Dr. Hollis)

Reading assignment: Chapter: 16

VI. Hormone of the Adrenal Medulla

The anatomy of the adrenal medulla and chromaffin tissue, along with the chemistry and biosynthesis of catecholamine hormones and their physiological actions are discussed. The concept of alpha- and beta-adrenergic receptors, the mechanism of cyclic AMP and catecholamine actions as well as the condition of pheochromocytoma are also reviewed. (Dr. Hollis)

Reading assignment: Chapter: 14 (pg. 328-331, 350-355)

N.B. All readings emphasize the mammalian hormones. All topics will be covered from the following aspects: a) A brief historical introduction to the topic, b) Source, c) Synthesis, d) Chemistry, e) Secretion, f) Metabolism, g) Physiological Roles, h) Mechanism of Action, and i) Pathophysiology.

Reference Books

1. Textbook of Endocrinology
   8th Edition (or later), Editor- Williams

2. Hormones – 2nd Edition
   Anthony W. Norman and Gerald Litwack

3. Annual Reviews of Biochemistry
   Annual Reviews of Physiology

   Prentice Hall, Inc., Upper Saddle River, NJ 07458

5. Any other current endocrinology or physiology textbook, as well as any of the references at the end of each chapter may be used.