BIOLOGY 4830 - ENDOCRINOLOGY
2024 Serial

1. Instructor. Dr. Robert J. Omeljaniuk, CB-4013, 343-8010 (ext. 8236).
Office hours by appointment.

2. Intent. To provide senior undergraduate students with an opportunity to study selected aspects of endocrinology in a directed study approach.

3. Marking Scheme.
Submitted assignments. 10 X 10 marks = 100 final marks.

4. Execution.

a. General.

(1) Students will be assigned specific readings from the course textbook and will be prepared to discuss the subject matter and any difficulties they may have with it in group discussions on a weekly basis. ***In the event that coordination meetings cannot take place, students should field their questions to the instructor either in person (if permitted), or by telephone or e-mail.***

(2) (a) Students' comprehension and mastery of the material will be evaluated on the basis of assignments submitted no later than one week following discussion of the subject matter.

(b) Answers to assigned questions may take any neatly presented word-processed format and text, figures and tables submitted as a hard copy; paragraph and short-essay answers supported by diagrams of the student's own design will be most appropriate.

(c) All figures and tables submitted will be prepared in the students' own hand; no photocopies or scanned/printed images are permitted. Textbook figure and table captions may be word-processed and included collectively in a separate section following figures and tables presented and are not included in the page limits.

(d) Absolutely NO electronic assistance of any kind is authorized in the preparation of figures and tables. Any indication of any electronic assistance used in this regard will result in the return of the entire assignment with a mark of zero, with no provision for resubmission.

(e) Page limits refer to narrative and not to figures or tables; assignment answers exceeding page limits will not be marked. In many cases, the preparation of an answer will require sourcing information from several sections of the textbook.

(3) (a) All assignments must be credibly completed.

(b) Class attendance is mandatory.

(c) If group gatherings are not permitted, then students must check-in with the instructor by sending an e-mail message confirming their continued participation in the course.

(d) As this course is assignment based, there is no provision for any supplementary or Special Exams.

(e) Assignments are due no later than 1200 hrs on the Friday of the week identified in the Tentative Outline below and are to be submitted into the appropriate assignment box on the third floor of the Biology area of the Centennial Building in the vicinity of CB3013 (an undergraduate laboratory).

(f) All submissions must be in hard-copy format.

b. Tentative Outline.

Serial	Chapter #	Chapter Title	Discussion Date (week of)	Assignment Deadline (week of)
1	03	The hypothalamus and anterior pituitary.	02 Sep	09 Sep
2	04	Posterior pituitary hormones.	09 Sep	16 Sep
3	05	Thyroid hormones.	16 Sep	23 Sep
4	06	Pancreatic hormones: insulin and glucagon.	23 Sep	30 Sep
5	07	Gastrointestinal hormones: Part 1.	30 Sep	07 Oct
6	07	Gastrointestinal hormones: Part 2.	07 Oct Study Week No Meeting	21 Oct
7	10	Adrenal corticoids.	21 Oct	28 Oct
8	11	Hormones of the adrenal medulla.	Read Only	Read Only
9	12	Androgens.	04 Nov	11 Nov
10	13	Estrogens and progestins.	11 Nov	18 Nov

5. Textbook.

Hormones (4th ed). G. Litwack. Academic Press. New York. 457 pp. 2022.

Assignment 1.

1. Describe the structures associated with, as well as, the organization of the brain:pituitary axis. (4 p. narrative limit; 3 final marks).

2. Describe and discuss the regulation of synthesis and release of hypothalamic factors and their subsequent influence on the synthesis and release of anterior pituitary hormones. (4 p. narrative limit; 3 final marks).

3. Describe the synthesis, chemistry, and biological activity of the anterior pituitary hormones. (5 p. narrative limit; 4 final marks).

Assignment 2.

1. Consider the anatomy, innervation and vascularization of the hypothalamus:posterior pituitary axis. (3 p. narrative limit; 3 final marks).

2. Describe and discuss the chemistry, biosynthesis and secretion of posterior pituitary hormones. (2 p. narrative limit; 3 final marks).

3 Describe and compare the biological activities of the posterior pituitary hormones. (3 p. narrative limit; 4 final marks).

Assignment 3.

1. Consider the gross, and fine anatomy and cytology of the thyroid gland. (1 p. narrative limit; 2 final marks).

2. Describe and discuss the chemistry, synthesis and secretion of thyroid hormones. (4 p. narrative limit; 4 final marks).

3. Discuss regulation of thyroid hormone secretion. (1 p. narrative limit; 2 final marks).

4. Explain the bases for thyroid hormone biological activity. (3 p. narrative limit; 2 final marks).

Assignment 4.

1. Read “Introduction” for basic knowledge.

2. Consider the morphology, anatomy and fine histology of the pancreas. (2 p. narrative limit; 3 final marks).

3. Describe the chemistry, biochemistry, and biological activities of insulin. (4 p. narrative limit; 3 final marks).

4. Describe the chemistry, biochemistry, and biological activities of glucagon. (2 p. narrative limit; 2 final marks).

5. Consider the structure and biological activities of Leptin. (2 p. narrative limit; 2 final marks).

Assignment 5.

1. Create tables in order to resolve hormones and neurotransmitters associated with the digestive tract. You may use a word-processing program to do this. (4 final marks).

2. Consider the anatomy, histology, and cytology of the gastrointestinal tract. (4 p. narrative limit; 6 final marks).

Assignment 6.

1. Describe and discuss the biochemical properties and molecular actions of the gastrointestinal hormones. (10 p. narrative limit; 10 final marks).

Assignment 7.

1. Consider the gross and fine anatomy, and cytology of the adrenal gland and liver. (2 p. narrative limit; 3 final marks).

2. Describe the regulation of the adrenal cortex. (2 p. narrative limit; 2 final marks).

3. Discuss the biological activities of the adrenocortical hormones. (4 p. narrative limit; 5 final marks).

Assignment 8.

1. Consider the autonomic nervous system, the sympathetic branch, and in this context, the adrenal medulla. (3 p. narrative limit; 4 final marks).

2. Describe the chemistry, biosynthesis, release regulation and metabolism of the catecholamines. (2 p. narrative limit; 3 final marks).

3. Discuss the biological actions and signaling mechanisms of the catecholamines. Include a resolution of catecholamine receptor subtypes. (4 p. narrative limit; 3 final marks).

Assignment 9.

1. Consider the gross and fine anatomy and cytology of the male reproductive system. (2 p. narrative limit; 2 final marks).

2. Describe the biosynthesis, chemistry and metabolism of the androgens. (3 p. narrative limit; 2 final marks).

3. Discuss regulation of androgen synthesis and release. (2 p. narrative limit; 2 final marks).

4. Describe and discuss androgen bioactivities. (4 p. narrative limit; 4 final marks).

Assignment 10.

1. Consider the gross and fine anatomy and cytology of the female reproductive system. (3 p. narrative limit; 3 final marks).

2. Consider the biosynthesis, chemistry and metabolism of estrogens and progestins. (2 p. narrative limit; 2 final marks).

3. Discuss regulation of the ovary. (3 p. narrative limit; 2 final marks).

4. Describe and discuss the biological activities of the estrogens and progestins. (3 p. narrative limit; 3 final marks).