

FA
BIOLOGY 4830- ENDOCRINOLOGY
2015 Serial

FILE COPY

1. Instructor. Dr. Robert J. Omeljaniuk, CB-4013, 343-8236
2. Intent. To provide senior undergraduate students with an opportunity to study selected aspects of endocrinology in a directed study approach.
3. Marking Scheme. 10 Assignments and/or seminars valued at 10 final marks each = 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.

(2) 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. Answers to assigned questions may take any neatly presented format including 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. 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) All assignments must be credibly completed; **class attendance is mandatory**. In the event a student completes the course with a mark between 40 and 49 %, they will be eligible to apply for a Special Exam, which covers all course material, to be arranged with Lakehead University Scheduling. Students' term marks will be prorated to 50% of the course mark; the Special Exam will be valued at 50% of the final mark. **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.**

b. Tentative Outline.

| Serial | Reading | Discussion Date (week of) | Assignment Deadline (week of) |
|--------|--|---------------------------|-------------------------------|
| 1 | Chapter 03: The hypothalamus and anterior pituitary. | 14 Sep | 21 Sep |
| 2 | Chapter 04: Posterior pituitary hormones. | 21 Sep | 28 Sep |
| 3 | Chapter 05: Thyroid hormones. | 28 Sep | 05 Oct |
| 4 | Chapter 06: Pancreatic hormones: insulin and glucagon. | 05 Oct | 12 Oct |
| 5 | Chapter 07: Gastrointestinal hormones. Part 1. | 12 Oct | 19 Oct |
| 6 | Chapter 07: Gastrointestinal hormones. Part 2. | 19 Oct | 26 Oct |
| 7 | Chapter 10: Adrenal corticoids. | 26 Oct | 02 Nov |
| 8 | Chapter 11: Hormones of the adrenal medulla. | 02 Nov | 09 Nov |
| 9 | Chapter 12: Androgens. | 09 Nov | 16 Nov |
| 10 | Chapter 13: Estrogens and progestins. | 16 Nov | 23 Nov |

5. Textbook. Hormones, 3rd ed. A.W. Norman and H.L. Henry. Academic Press. New York. 413 pp. 2015.

Assignment 1.

1. Describe the structures associated with, as well as, the organization of the brain:pituitary axis. (2 p. narrative limit; 3 final marks).
2. Describe and discuss the functional relationships between the brain and pituitary. (3 p. narrative limit; 3 final marks).
3. Describe the synthesis, chemistry, and biological activity of the pituitary hormones. (5 p. narrative limit; 5 final marks).

Assignment 2.

1. Consider the anatomy, innervation and vascularization of the posterior pituitary. (1 p. narrative limit; 1 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; 6 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. Discuss the coordinate effects of insulin and glucagon on intermediary metabolism. (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. (2 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).