BIOL 432 A01 (CRN 20374)
Molecular Endocrinology

Spring 2025
Department of Biology, University of Victoria
Tues/Wed/Fri 11:30 am - 12:20 pm

Elliott Building 167

*Lectures will be **synchronous & in-person**.*
Brightspace will be used as an additional resource during lectures and for exams.

Instructor: **Dr. Nicole Templeman** **Email: nmtempleman@uvic.ca** **Office: Petch 053A**

Office Hours:

Petch 053A Mondays 11 am – 12 pm, or by appointment
(email **nmtempleman@uvic.ca** with "BIOL 432" in the subject line).

Learning Outcomes:

This is an introduction and survey course of general and contemporary endocrinology topics.

Following this course, you should be able to describe:

- the key cells and tissues of the endocrine system
- the molecular basis for the synthesis, secretion, and transportation of major hormones
- the target cells/tissues, signal transduction pathways, and effects of major hormones
- how levels and actions of hormones & receptors are regulated, in healthy and disease states

You should be able to bring together this knowledge to demonstrate a good understanding of:

- how fundamental aspects of our physiology, behavior, and health (*e.g.*, growth, metabolism, reproduction, stress responses) are regulated by hormones
- the consequences of hormone disruption/deregulation, and causes of endocrine disorders

In addition, you should be able to critically interpret scientific literature related to endocrinology.

Description from the UVic Calendar:

Units: 1.5, Hours: 3-0
Basic and molecular aspects of endocrinology. Brain hormones and their precursors, insulin and its receptor, gene-associated peptides, new glycoprotein hormones, growth factors, steroids, the superfamily of steroid and thyroid receptors, pheromones, oncogenes, and immunoendocrinology. Lectures and presentations of scientific papers.

Prerequisites: You must have completed one of: BIOL 360, 365, 305A, BIOC 299, 300A, 300B.

Brightspace:

We will use the university's Brightspace learning/teaching resource to post important course material, including **lecture notes, practice questions, assignments, lecture recordings, practice exams, exams, journal articles, and course announcements**.
Please check Brightspace regularly.

Lecture recordings:

Sessions in this course may be recorded, to allow students who need to miss a class (due to illness, etc.) to keep up with the material. **Please do not expect or rely on the recordings – there may be occasions when lecture recordings are not available due to technical issues.** The recordings are **not** intended as a study aid or replacement for in-person attendance.
The recordings will only be available for a maximum of 1 week after the lecture.

To access the recordings, you must click the **'Echo360 videos, Biol432'** link in the Lecture Videos module on Brightspace. It is necessary for you to enter Echo360 **using this link** the first time, to access the material. This link takes you to your Echo360 library/course within Brightspace, and there you can view the recordings. Please be aware that automated transcription and captioning is at best 70-90% accurate and by nature will include error.

Course textbook (recommended):

Greenspan's Basic and Clinical Endocrinology by Gardner, D.G. and Shoback, D. 9th or 10th Edition. **This textbook is recommended, but not required.** We will **NOT** be covering all textbook material. Journal articles will also be assigned, and lecture notes will contain additional suggested resources. **The primary source of information will be the lecture material provided and covered in class.**

Course Evaluation:

15% - Classroom participation
18% - Journal article assignments
22% - Midterm exam [Course requirement]
45% - Final exam [Course requirement]

15% Classroom participation – completion of in-class review questions on Brightspace
Practice questions and/or activities will be given via Brightspace "quiz" modules during lectures, to review and test your understanding of the material on an ongoing basis. Your grade for this portion will be calculated as the percentage of these in-class questions that are completed/submitted, calculated after dropping 3 missed quizzes across the semester.

18% Journal article assignments
Journal articles (contemporary research articles) will be assigned, and class time will be spent discussing them. Comprehension and critical interpretation of journal articles and their presented data will be evaluated through take-home assignments containing multiple choice, fill in the blanks, and short answer questions. Submitted assignments are expected to be your own work.
There is a limited extension period after assignment deadlines for students who require it, but beyond this, late assignments are not accepted (will receive a grade of 0).

22% Midterm exam – Wednesday February 12th
32-min online exam, with 48 minutes provided to write it (1.5X universal extended time).
The exam will be in-class/in-person, closed book, on Brightspace. The midterm exam will be cumulative, and may be a mix of multiple choice, fill in the blanks, and short answer questions.
The midterm exam must be written to receive a final grade for the course.

45% Final exam - Date TBA, during the exam period between **Apr 7 - Apr 25.**
2-hour online exam, with 3 hours provided to write it (1.5X universal extended time).
The exam will be in-person, closed book, on Brightspace. The final exam will build on fundamental concepts that were established during the first half of the course, but it will primarily focus on previously untested material from after the midterm. The final exam may be a mix of multiple choice, fill in the blanks, and short answer questions.
The final exam must be written to receive a final grade for the course.
Deferred final exams will be handled as outlined in the University of Victoria academic calendar.

Additional course evaluation details:

Students are expected to be present for the midterm and final exam on the dates specified. Students who cannot attend an exam due to illness/unexpected circumstances should notify me immediately.

Failure to write the midterm exam will result in a grade of 0% for the exam (and a grade of N for the course), unless for unexpected and unavoidable circumstances (*e.g.*, illness, accident, or family affliction) or valid and documented conflicting responsibilities. Students who miss the midterm exam for one of the legitimate reasons listed above will have the opportunity to write a deferred midterm exam within approximately 10 business days of the midterm date.

Failure to write the final exam will result in a grade of 0% for the exam (and a grade of N for the course), unless for unexpected and unavoidable circumstances (*e.g.*, illness, accident, or family affliction) or valid and documented conflicting responsibilities. If there are unexpected & unavoidable circumstances or documented conflicting responsibilities (described further in the academic calendar) that cause a student to miss the final exam, but the instructor has indicated that they will allow the exam to be written before the final grades are submitted, students must submit a **Request for In-course Extension form** to the instructors as early as possible. Students must submit a **Request for Academic Concession form** if the course requirements (*i.e.*, a deferred final exam) are to be completed after the final grades are submitted. **Policies regarding undergraduate student academic concessions also detailed in the academic calendar. Deferred final exams will be arranged by the instructor or the University. Travel is not an acceptable reason to miss an exam or the deferred final exam date.**

Students who have completed both the midterm and the final exam will be considered to have completed the course, and will be assigned a final grade. Failure to complete one or more of these elements will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student's GPA as 0. The maximum percentage that can accompany an N on a student's transcript is 49. **Therefore, you must write both the midterm exam and the final exam to pass the course.**

~~~

The exams and assignments will test your ability to understand and explain complex concepts. Therefore, memorization of lecture slides will not be sufficient. **You are expected to have an understanding of concepts covered in 3rd-year Cell Biology and Biochemistry, and the onus is on you to review pertinent material as needed.** We also expect students to take notes during lectures. Copies of the slides will be provided on Brightspace, but these notes should not be considered to be complete; students are also responsible for material discussed during the lectures.

Your final overall mark in the course will be given as a percent based on the following guidelines: A+ = 90-100%, A = 85-89.9%, A- = 80-84.9%, B+ = 77-79.9%, B = 73-76.9%, B- = 70-72.9%, C+ = 65-69.9%, C = 60-64.9%, D = 50-59.9%, F = 0-49.9% (if all requirements completed), N (if not all requirements completed).

Student conduct:

We support the university's commitment to promoting critical academic discourse while providing a respectful and supportive learning environment. All members of the university community have the right to this experience and the responsibility to help create such an environment. The university will not tolerate racism, sexualized violence, or any form of discrimination, bullying or harassment.

Please be advised that, by logging into UVic's learning systems or interacting with online resources and course-related communication platforms, you are engaging in a university activity. All interactions within this environment are subject to the university's expectations and policies. Any concerns about student conduct may be reviewed and responded to in accordance with the appropriate university policy. To report concerns about online student conduct: **onlineconduct@uvic.ca**.
~~~

Students are also required to abide by all academic regulations set as set out in the university calendar, including standards of academic integrity. **Violations of academic integrity (*e.g.* cheating and plagiarism) are considered serious and may result in significant penalties.** Submitted material must be your own work. The code of professional conduct is here: Student code of conduct.

Use of abbreviations and spelling expectations

In this course, we use abbreviations that are commonly used in the field. In scientific literature, the proper use of an abbreviation requires it to be first fully defined. We aim to only use abbreviations after we have defined the term fully.

You are expected to know the **full names** of hormones, receptors, and important molecules that are defined for you, **not** solely the abbreviations (particularly any terms emphasized with purple text in the lecture notes). Within a particular question on an exam, if you have defined the abbreviation within that question OR if an abbreviation is given in the text of question itself, you may use it. Otherwise, please use full names. Half marks will be given for the use of abbreviations, unless a particular question specifies that an abbreviation is acceptable.

Correct spelling is also important, but generally a single letter mistake will still receive full marks. However, please note that sometimes a single letter will change the meaning (*e.g.* tropic vs trophic), so spelling mistakes will be assessed on a case-by-case basis.

Copyright:

All course content and materials are made available by instructors for educational purposes and for the exclusive use of students registered in their class. The material is protected under copyright law, even if not marked with a ©. Any further use or distribution of materials to others requires the written permission of the instructor, except under fair dealing or another exception in the Copyright Act. Violations may result in disciplinary action under the **Resolution of Non-Academic Misconduct Allegations policy (AC1300).**

Support services:

All of us benefit from support when faced with difficulties. If you need support, there are services on campus to help you. Please be reminded of the following resources:
Centre for Academic Communication https://www.uvic.ca/learningandteaching/cac/
Counselling Services https://www.uvic.ca/students/health-wellness/counselling/index.php
Peer Support Centre https://uvss.ca/peer-support-centre/
Indigenous UVic Student Support https://www.uvic.ca/services/indigenous/students/index.php
Health & Wellness Services https://www.uvic.ca/student-wellness/
Libraries https://www.uvic.ca/library/
Ombudsperson https://www.uvic.ca/universitysecretary/senate/appeals/ombudsperson/index.php
Computer Help Desk https://www.uvic.ca/systems/about/academic/helpdesk/index.php

Centre for Accessible Learning:

The University of Victoria is committed to creating a learning experience that is as accessible as possible. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with us. If you have a disability or chronic health condition, or think you may have a disability, you may also want to meet with an advisor at the Centre for Accessible Learning (CAL). You can find more information about CAL here: https://www.uvic.ca/services/cal/

Territory acknowledgement:

We acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Provisional Lecture Schedule 2025 (adjustments may be necessary)

Week 1:

1. Tues Jan 7. Introductions/Outline & Endocrine system overview
2. Wed Jan 8. Endocrine system overview
3. Fri Jan 10. Endocrine system overview

Week 2:

4. Tues Jan 14. Hypothalamus and pituitary
5. Wed Jan 15. Hypothalamus and pituitary
6. Fri Jan 17. Data interpretation; Templeman lab research

Sun Jan 19 Last day for 100% reduction of second term fees if drop course

Week 3:

7. Tues Jan 21. Peptide hormone biosynthesis & mechanisms
8. Wed Jan 22. Peptide hormone biosynthesis & mechanisms

Wed Jan 22 Last day for adding courses that begin in the second term

9. Fri Jan 24. Peptide hormone biosynthesis & mechanisms

Week 4:

10. Tues Jan 28. Surface receptors
11. Wed Jan 29. Surface receptors
12. Fri Jan 31. Growth hormone, growth factors, and growth

Fri Jan 31 Last day for paying second term fees without penalty

Week 5:

13. Tues Feb 4. Pancreatic hormones: insulin and glucagon
14. Wed Feb 5. Diabetes and metabolic syndrome
15. Fri Feb 7. Endocrine regulation of energy balance

Sun Feb 9 Last day for 50% reduction of tuition fees for standard courses

Week 6:

16. Tues Feb 11. Endocrine regulation of energy balance **[Journal article]**

17. Wed Feb 12. Midterm exam

18. Fri Feb 14. Nuclear receptors

Sun Feb 16: *Journal article assignment #1 – deadline*

Week 7: Feb 17-21 Reading Break

Sun Feb 23: *Journal article assignment #1 – late/extended deadline (no further extensions)*

Week 8:

19. Tues Feb 25. Thyroid hormones
20. Wed Feb 26. Thyroid hormones
21. Fri Feb 28. Reproductive endocrinology

Fri Feb 28 Last Day to Drop Courses without Failure

Week 9:

22. Tues Mar 4. Reproductive endocrinology
23. Wed Mar 5. Reproductive endocrinology: puberty & pregnancy
24. Fri Mar 7. Reproductive system dysfunction/endocrine disorders

Week 10:

25. Tues Mar 11. Adrenal cortex and mineralocorticoids
26. Wed Mar 12. Adrenal cortex and glucocorticoids
27. Fri Mar 14. Adrenal medulla and catecholamines

Week 11:

28. Tues Mar 18. Adrenal medulla and catecholamines
29. Wed Mar 19. Integrated stress responses
30. Fri Mar 21. Calcium homeostasis and bone

Week 12:

31. Tues Mar 25. Calcium homeostasis and bone **[Journal article]**
32. Wed Mar 26. Exercise and the endocrine system
33. Fri Mar 28. Circadian rhythms and the endocrine system

Sun Mar 30: ***Journal article assignment #2 – deadline***

Week 13:

34. Tues Apr 1. Aging and the endocrine system
35. Wed Apr 2. Aging and the endocrine system
36. **Fri Apr 4. Last Class.** Overview & review

Fri Apr 4: ***Journal article assignment #2 – late/extended deadline (no further extensions)***

EXAM PERIOD Mon Apr 7 – Fri Apr 25 (final exam date TBD)