

This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 364 / APBI 311 – Comparative Cardiovascular, Respiratory and Osmoregulatory Physiology

General Course Syllabus (as of October 2019)

About the Course:

Course Description: A course on cardiovascular, respiratory, and osmoregulatory physiology. Preference will be given to students who are in Biology, Nutritional Sciences, and Honours Biophysics.

Course Format: Lecture

Credits: 3

Prerequisites: BIOL 204 and one of BIOL 260, BIOL 361.

Course Learning Outcomes:

By the end of this course, students will be able to:

- Explain the benefit and roles of a circulatory system, and describe the anatomical solutions and physiological mechanisms (e.g. the basic structural components and designs of vertebrate and invertebrate hearts, the cardiac cycle, and the regulation in the heart and blood vessels) that metazoan animals use to regulate the movement of gases & substances to and from tissues, as needed. (Circulatory Systems)
- Compare the different respiration strategies in animals and explain the mechanical basis and limits of each respiratory system design. (Respiratory system)
- Describe how the circulatory and respiratory systems are related and affect the efficiency of gas exchange.
- Describe the three homeostatic processes (osmotic regulation, ionic regulation, and nitrogen excretion) in light of ionic and osmotic balance, and describe how these processes are regulated (and evolve) in parallel to ensure homeostasis. (Osmoregulation)
- Discuss the biological significance of temperature regulation and describe the impact of physiological (endotherm vs. ectotherm metabolism), behavioral, and environmental factors limiting thermal regulation. (Temperature)

Textbooks and Additional Resources:

Textbook – recommended reading: Moyes, CD and Schulte, PM. Principles of Animal Physiology. Benjamin Cummings, New York, 3rd edition (4 chapters).

- Access Key is not required.
- Each lecture section has a corresponding chapter by the same title in the recommended text. (Renal function is under the Osmoregulation chapter).

Lecture outlines in powerpoint will be posted on Canvas

Grading Scheme:

Assessment	Weight
Midterm 1 (Circulation)	20%
Midterm 2 (Respiration)	20%
Final Exam	60%

Midterm Exams: The Circulation & Respiration sections conclude with an in-class, closed-book, written examination of lecture material.

Final Exam: During the final exam period, all lecture material from all four sections will be assessed with a 3-hour exam. The breakdown of the exam will be proportional to the number of lectures in each section. **Students must pass the final exam to pass the course.**

Schedule of Topics:

There are 4 sections to the lecture: Circulation, Respiration, Osmoregulation (and Renal function), and Thermoregulation. Below is a sample weekly schedule from 2018W2 (subject to change):

Week	Lecture Topic
1	Course introduction & expectations Circulation
2	Circulation
3	Circulation
4	Circulation & Review for Circulation midterm
5	Midterm 1 Respiration
6	Respiration
READING BREAK	
7	Respiration
8	Respiration & Review for Respiration midterm
9	Midterm 2 Osmoregulation
10	Osmoregulation
11	Osmoregulation
12	Temperature
13	Temperature & Review for Final

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](#).