



COURSE OUTLINE

1. **Course:** ZOOL 463, Animal Physiology II - Winter 2022

Coordinator(s)

Name	Email	Phone	Office	Hours
Professor Hamid Habibi	habibi@ucalgary.ca	403 220-5270	BI 276	By Appointment

Section(s)

Lecture 01 : MWF 10:00 - 10:50 in ENG 60

Instructor	Email	Phone	Office	Hours
Professor Hamid Habibi	habibi@ucalgary.ca	403 220-5270	BI 276	By Appointment
Dr Corey Flynn	cflynn@ucalgary.ca	403 220-5055	BI 448	By Appointment Only
Dr Douglas Syme	syme@ucalgary.ca	403 220-5281	BI 262	email, or by appt
Dr Matt Vijayan	matt.vijayan@ucalgary.ca	403 220-3094	BI 268	By Appointment

Welcome to Zoology 463 Animal Physiology.

You will interact with 4 instructors in the lecture/lab component of the course.

Dr. Hamid Habibi, who is also the course coordinator, and you should contact him for administrative matters surrounding lectures and examinations.

Dr. Corey Flynn, who is also the lab coordinator, and you should contact him for administrative matters surrounding labs such as scheduling and attendance. For lab related matters, please use the lab email address zool463@ucalgary.ca.

Dr. Doug Syme and Dr. Matt Vijayan.

Please communicate with your instructors using the email addresses above, and be mindful that while we will attempt to respond as quickly as possible, it might take a day or two, and we may not be able to respond on weekends.

You will also interact with the lab technicians and TAs, and will hear more about this during labs.

To account for any necessary transition to remote learning in the winter 2022 semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

Online Delivery Details:

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

This course has a registrar scheduled, synchronous final exam. The writing time is 1 hours + 50% buffer time.

For the month of January 2022, the lecture and lab material will be delivered online via Zoom and the course D2L website. You are required to have adequate access to technology as per the statement in Course Materials below. Note, while not required, a Webcam/Camera (built-in or external) and Microphone and Speaker (built-in or external), or headset with microphone are strongly suggested as they will be helpful for communication with your classmates and instructors during Zoom meetings as expected during the labs

Dr. Habibi - (Jan 10 - Feb 4, Body Fluids & Hemostasis, Body Defense System and Thermoregulation) will record his lectures and post them to the D2L site for you to access and review at your convenience (asynchronous); there will not be live/synchronous lectures for this segments of the course.

The remainder of the course will be delivered in-person unless the University of Calgary determines that more (or all) of the Winter 2022 term will switch to remote delivery. If that decision is made, details about the mode of

delivery (synchronous/asynchronous) will be provided on D2L.

In all cases, students will be responsible for reviewing the lecture material prior to any exam that covers that material. See the detailed lecture and exam schedule below.

Lab 01 (Jan 18 - Jan 20) will be delivered synchronously, and you are expected to attend your scheduled lab session via ZOOM.

You will be required to attend your scheduled lab session via a Zoom meeting. During the lab you will watch the experiments being completed and participate in discussions of the concepts and techniques being used. You will be required to answer questions and contribute to the discussions of the lab experiments. After the lab is completed, you will be provided with data from each lab exercise that you will use to complete a lab report or lab quiz. Further information about the lab exercises, reports, quizzes, etc will be provided on the D2L website.

Lab 02 - Lab 06 will be delivered in-person in BI 199. If the University of Calgary decides to extend the period of remote learning beyond Jan 2022, then the remaining labs will also be delivered synchronously via ZOOM.

Exams will be delivered synchronously through the course D2L website.

There will be two evening midterm exams, Feb 9 and Mar 16, starting at 7PM and running until 8:30. There will also be a registrar scheduled final exam, 1.5 hour (60 minutes plus 30 minutes buffer time) in duration. All the exams will have a specific start time and duration, and you will be expected to be online to access the exams during these time periods. See Out of Class Activities below for details.

Course Site:

D2L: ZOOL 463 L01-(Winter 2022)-Animal Physiology II

Note: Students must use their U of C account for all course correspondence.

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Biological Sciences Equity Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, staff, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Chair, Constance Finney (constance.finney@ucalgary.ca), or a committee representative of your choice at <https://science.ucalgary.ca/biological-sciences/about/equity-diversity-and-inclusion>

2. Requisites:

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Zoology 461.

Antirequisite(s):

Credit for Zoology 463 and any of Biology 305, Medical Science 404, 604, Zoology 269, Kinesiology 259, 260 or 323 will not be allowed.

3. Grading:

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
6 Labs worth 4% each ¹	24%	Ongoing		
Midterm exam 1 - Lectures 1-12 ²	25%	Feb 09 2022 at 07:00 pm (90 Minutes)	online	D2L
Midterm exam 2 - Lectures 13-24 ³	25%	Mar 16 2022 at 07:00 pm (90 Minutes)	online	D2L
Registrar Scheduled Final Exam ⁴	26%	Will be available when the final exam schedule is released by the Registrar	online	Will be available when the final exam schedule is released by the Registrar

¹ Please see D2L for details regarding lab.

² Mid-term exam will cover topics including Body Fluids & Hemostasis, Body Defense System, and Thermoregulation (Lectures 1-12); 7-8:30 PM (60 minutes plus 30 minutes buffer time), synchronous

³ Mid-term exam will cover topics including Respiration and Circulation (Lectures 13-24); 7-8:30 PM (60 minutes plus 30 minutes buffer time), synchronous

⁴ Final exam will cover topics including Renal Physiology and Gastrointestinal Physiology (13 lectures). registrar scheduled, 1.5 hour (60 minutes plus 30 minutes buffer time), synchronous

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	71 %	67 %	63%	59%	55 %	50 %

This course will have a Registrar Scheduled Final exam that will be delivered on-line. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 1 hours.

Per section [G.5](#) of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to **the end** of the registrar scheduled **synchronous** exam to support students. This way, your exam schedule accurately reflects the **start time** of the exam for any **synchronous** exams. E.g. If a **synchronous** exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the **end** time of the **synchronous** exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9 am and finish at 12pm.

You must obtain a passing grade (D minimum) in the lecture component of the course (weighted average of the midterms and final exam) to be considered for a passing grade overall in the course. Students who do not obtain at least a D in the lecture component of the course will receive an F as their final grade in the course, regardless of their lab grades.

Students who miss more than one midterm exam will not be eligible to pass the course. A final grade of F will be given to students who miss more than one midterm exam.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. Missed Components Of Term Work:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

There are no makeup midterm exams. If a student misses a midterm exam due to a university-sanctioned excuse (debilitating illness, severe domestic affliction, religious conviction, or faculty approved activity), the weight of that midterm will be equally distributed to the remaining midterm exams and final exam. Missing an exam for other reasons will result in a grade of zero for that exam. A student who misses more than one midterm exam will not be eligible to pass the course and will receive a grade of F in the course.

Attendance at labs is mandatory. Students are expected to attend the lab sessions for which they are scheduled. If there is an occasion where a student is unable to attend their scheduled lab they should contact the lab coordinator, Dr. Flynn, using the course email address **zool463@ucalgary**, to determine if an alternative lab time can be arranged. If a student misses their lab for a reason other than a university-sanctioned excuse (debilitating illness, severe domestic affliction, religious conviction, or faculty approved activity), a score of zero (0) will be applied for that lab. Lab reports will be submitted to an appropriate dropbox in D2L at a specified time after the completion of the lab. Late reports will receive a late penalty of 10% removed from the lab report grade for each day (24 hour period) it is late. Reports that are more than 4 days late (with no university-sanctioned excuse) will receive a score of 0.

5. **Scheduled Out-of-Class Activities:**

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm 1	WEB-BASED	Tuesday, February 9, 2021 at 7:00 pm	90 Minutes
Midterm 2	WEB-BASED	Tuesday, March 16, 2021 at 7:00 pm	90 Minutes

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

The first midterm exam will cover Body fluids and compartments, Blood cells and Hemostasis, Blood clotting, Immune system, Body temperature and metabolism lecture material.

The second midterm exam will cover Respiration and Circulation lecture material.

Renal and Gastrointestinal physiology lecture material will be covered on the Final exam.

If you have an existing class conflict that requires your attendance during the scheduled midterm exam period, please contact the course coordinator Dr. Habibi (habibi@ucalgary.ca) at least 4 weeks prior to the exam.

PLEASE NOTE THAT THERE WILL NOT BE A DEFERRED MID-TERM EXAMINATION.

If you have an existing class conflict that requires your synchronous attendance during one of the scheduled exam periods, then please contact the course coordinator Dr. Habibi (habibi@ucalgary.ca) at least 2 weeks prior to the exam so that an alternative can be arranged. The alternative will consist of writing the exam at a different time the day it is scheduled. Students who write an exam at an alternate time will also be required to sign a confidentiality waver indicating that they will not share details of the exams, nor will they knowingly receive details from other students.

The midterm exams will be designed to be written within 60 minutes, plus an additional 30 minutes to allow for technical issues (90 minutes total). Time will be adjusted for SAS students if needed and accommodations for students will be done on a case-by-case basis.

The final exam will be registrar scheduled, and will be written synchronously during the time period assigned. It will be designed to be written within 60 minutes, plus an additional 30 minutes to allow for technical issues (1.5 hours total). Time will be adjusted for SAS students if needed and accommodations for students will be done on a case-by-case basis.

6. Course Materials:

Recommended Textbook(s):

Hill, Wyse, Anderson, *Animal Physiology, 4th edition*. Sinauer..

The course text is recommended, to help you prepare for or review lecture material. However, you are not required to have the text for the course, and all material that you are responsible for will be provided in lecture. Examinations will be based on lecture material only, and will be based on the lecture material provided/delivered by your instructors. Suggested readings from the textbook, if any, are only to help reinforce the lecture material, and you will not be tested on any material from the text that is not also covered in lecture.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

IMPORTANT: Midterm exams and Final Exam will be administered online through the D2L course website. It is the student's responsibility to ensure they have adequate computer and internet access. Students will be required to begin their midterm exams promptly at 7:00 PM, and the final exam at the start of the registrar scheduled exam period. Students will have a 20 minute window in which to begin their exam. If a student has NOT begun their exam within 20 minutes (7:20pm for the midterm exams), they will receive a grade of 0 (zero) for that midterm. If a student encounters any technical issues starting an exam, they MUST document the issue by taking a photo, screenshot, or video, and they must contact the instructor immediately so that either additional time can be provided to access the exam or alternative arrangements made. **Students experiencing such difficulties who do not contact their instructor providing evidence of technical difficulties within 20 minutes of the scheduled start of the exam will not be allowed to write the exam and will receive a grade of zero (0) on the exam.** If a student's exam is suspended for any reason (lost internet connection, internet browser crashes etc.), they MUST provide evidence (photo/ screenshot/video) and contact the instructor immediately. Students will then be granted re-entry to suspended exams if they began the exam on time, provided evidence of the suspension, and still have time remaining to complete their exam.

All exams will have an additional 50% buffer time applied to accommodate any issues with online exams. Therefore, the midterm exams can be completed in 1 hour, but students will be given 1.5 hours to complete the exam (For the final exam, 40 minutes + 20 minute buffer = 60 minutes). If students have technical difficulties that are corrected within the duration of the 50% buffer time, **no additional time will be granted**. However, if the technical difficulties persist for a duration greater than the buffer time, additional time will be considered at the discretion of the instructor on a case-by-case basis.

Answers to questions on the exams are to be based on the lecture material you are provided, including the course text. While you are encouraged to access other resources (texts, etc) to reinforce the lecture material and strengthen your comprehension, whether an exam answer is considered correct will be based on the information you are provided in lecture, not other resources. This is not intended to discourage further reading, but rather to discourage attempts to access disallowed resources during exams (see below).

The exams are 'open book' in the sense that you may access your own, previously existing, class notes during the exam. These must be your own notes only, which include lecture material that we provide to you, and you may only use notes that you have in your possession before the exam commences (i.e. you may not access other resources to supplement your notes during the exam).

No other aids are allowed on tests or examinations, including accessing internet resources such as search engines (Google etc), other websites, shared documents (Google docs etc) or chat servers (Discord, WhatsApp etc), etc., and you are specifically prohibited from working with or contacting any other individuals while you complete the exam. Violation of these rules is considered academic misconduct with penalties as described in the University Calendar section K.

Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. **Human & Living Organism Studies Statements:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students taking laboratory and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

11. **Reappraisal Of Grades:**

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. **Other Important Information For Students:**

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (syva@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act

with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
Student Academic Misconduct [Policy](#) and [Procedure](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

e. Academic Accommodation Policy:

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Lisa Gieg by email lmgieg@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

f. Freedom of Information and Privacy: This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.

g. Student Union Information: [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.

h. Surveys: At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

i. Copyright of Course Materials: All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

LECTURE SCHEDULE AND MIDTERM EXAMINATION SCHEDULE - WINTER 2022

H Habibi, 12 Lectures (Jan 10 - Feb 4)

Body Fluids & Hemostasis

- Body fluids and compartments

- Blood cells and Hemostasis
- Blood clotting

Body Defense System

- Body fluids and compartments
- Blood cells and Hemostasis
- Blood clotting

Thermoregulation

- Body temperature and metabolism
- Heat exchange mechanisms
- Thermoregulation and thermo receptors
- Hypothermia, hyperthermia and pyrexia
- Heterothermy and Hibernation
- Thermoregulation in Poikilotherms

February 9, 2022 Mid-Term Exam1 (lectures 1-12) (7:00 - 8:30 pm)

D. Syme, 12 lectures (Feb 7 - March 11)

Respiration

- Anatomy and lung/gill mechanics
- Diffusion and gas exchange
- O₂ and CO₂ transport

Feb 20 - 27 TERM BREAK, NO LECTURES or LABS

- Acid/base balance
- Regulation of breathing
- Respiratory stress

Circulation

- Overview of cardiovascular function
- Comparative anatomy/function of the heart I
- Comparative anatomy/function of the heart II
- Cardiac muscle –structure and electrical properties
- The heart – electrical and mechanical properties
- Blood flow/pressure regulation and comparative cardiovascular patho/physiology

March 16, 2022 Mid-Term Exam2 (lectures 13-24) (7:00 - 8:30 pm)

C. Flynn, 7 lectures (Mar 14- 28)

Renal Physiology

- Evolution of the mechanisms of salt and water balance
- Function of the mammalian nephron-I
- Function of the mammalian nephron-II
- Function of the mammalian nephron-III
- Physiological compensation to environmental changes
- Physiological compensation to environmental changes

M. Vijayan, 6 Lectures (Mar 30 - April 11)

Gastrointestinal Physiology

- Anatomy of the GI system
- Gastric motility
- Gastric secretion
- Intestinal digestion and absorption
- Regulation of GI function
- Animal adaptations in GI function

Course Outcomes:

- General concept of body Fluids and Hemostasis. Emphasis will be placed on body fluid composition and compartments, blood cells and Hemostasis and mechanisms of preventing blood loss by initiation blood clotting
- Body defense system and basis for innate and adaptive immune response. Students will understand the basis for hypersensitivity, cell mediated and humoral immunity. They will also have an understanding of the mechanism of histocompatibility.
- Thermoregulation and mechanisms metabolism and temperature control in endotherm and ectotherms. Students will have an understanding of heat exchange mechanisms and thermoreceptors, and physiological mechanisms of dealing with extreme heat and cold.
- Demonstrate understanding of the osmoregulatory challenges facing various organisms and compare/contrast the different ways these challenges are overcome. Demonstrate deep understanding of the anatomy and function of the mammalian nephron.
- Explain how the design of respiratory systems facilitates exchange of gasses between the animal and environment, how these structures are regulated, how differences between water and air impact these designs and their regulation, and how and why gasses are transported in blood in the forms they are.
- Explain how the hearts of animals are designed to circulate fluids through the body, how the design of the heart and central circulation reflect differences in the medium in which the animal lives and metabolic rate, how the heart functions as an effective pump, and how the cardiovascular system responds to metabolic demand and controls blood flow.
- Students are expected to have a basic understanding of the functioning of the gastrointestinal tract. They should be familiar with the regional specificity of digestion and absorption in the GI tract. The focus will be on the cellular mechanisms involved in the digestion and absorption of nutrients.
- The students will also have a general understanding of how the GI function is regulated by the nervous and endocrine system.
- Students will be expected to apply their knowledge about these systems to perform lab/inquiry-based experiments, and to collect, assess, and present their results in written scientific reports that demonstrate the ability to critically assess and explain their data.

Electronically Approved - Jan 10 2022 12:22

Department Approval

Electronically Approved - Jan 10 2022 14:58

Associate Dean's Approval