

## COURSE SYLLABUS

COURSE TITLE:	BIOL 318 Comparative Animal Systems Physiology		
COURSE CODE:	21435	TERM:	Winter 2020
COURSE CREDITS:	3.0	DELIVERY:	Lecture & Practicum (Lab)
CLASS SECTION:	01	START DATE:	6 Jan 2020 (lectures) 15 Jan 2020 (labs)
LECTURE LOCATION:	room 124 Biology Bldg	LAB LOCATION:	room 122 Biology Bldg
LECTURE TIME:	9:30 to 10:20 am MWF	LAB TIME:	1:30-5:20 pm Wednesday
WEBSITE:	via PAWS/Blackboard		

### Course Description

An in-depth examination of cardiovascular, respiratory, osmoregulatory, digestive, and reproductive system physiology in animals. Examples are drawn from vertebrate and invertebrate models. Emphasizes endocrine and nervous coordination of cellular and whole animal body functions.

Prerequisite(s): BIOL 317 (formerly BIOL 217).

Note: Students with credit for BIOL 218 will not receive credit for this course.

### Learning Outcomes

By the completion of this course, students will be expected to:

1. demonstrate an in depth understanding of physiological principles and processes associated with major animal organ systems
2. analyze and solve realistic medical, veterinary or other physiological problems and case studies
3. interpret complex scientific articles relevant to course material
4. relate new scientific knowledge to their understanding of how the animal body functions
5. explain current scientific research findings through an oral presentation
6. demonstrate effectiveness in team-work to accomplish complex tasks

Note: The University of Saskatchewan Learning Charter is intended to define aspirations about the learning experience that the University aims to provide, and the roles to be played in realizing these aspirations by students, instructors and the institution. A copy of the Learning Charter can be found at: [http://www.usask.ca/learning\\_charter/](http://www.usask.ca/learning_charter/)

## Course Overview

The purpose of this course is to provide you with an in depth understanding of the physiology of major body organs and systems in animals. BIOL 318 will build upon fundamental information from BIOL 224 and BIOL 317. Lectures will incorporate examples from a variety of animals although the organ systems of mammalian groups tend to be the best studied. The course will integrate modern research findings in physiology, biochemistry, evolution and genetics with the classical understanding of animal physiology. Six afternoons of hands-on lab exercises plus three afternoons for student presentations are also included in this course. In the hands-on exercises, you will work in small groups to solve problems associated with case studies drawn from medical, veterinary or other real-world situations. The case studies are used to provide a practical illustration of some of the major lecture concepts and are coordinated with lecture material as shown in the schedule below. You will have access to the internet and electronic University Library resources during the lab period to assist in solving the cases. A one-page report summarizing your case study will be prepared as a group exercise during the lab period and submitted at the conclusion of the lab. You will also hone your scientific writing and oral communication skills through literature research assignments and a class presentation during the laboratory. Each student will be assigned three recent scientific articles to read and understand. These will be spaced-out during the term and coordinated with other lab work and lecture material as shown in the schedule below. You will be responsible for completing a one page summary of each article, and giving a 20 minute oral presentation on one of the articles. Note that the lab periods are scheduled for 3 hrs 50 minutes per afternoon; students must make themselves available for this entire time period.

## Class Schedule

<b>Week/ Dates</b>	<b>Instructor Major Lecture Topics Textbook Readings*</b>	<b>Laboratory Activity</b>	<b>Student Work Due/Other Types of Assessment</b>
<b>Week 1</b> Jan 6 to Jan 10	<i>Marchant</i> Nature and purpose of class Circulatory System Physiology Textbook: Part V	<i>No lab scheduled this week</i>	Nothing due
<b>Week 2</b> Jan 13 to Jan 17	<i>Marchant</i> Circulatory System Physiology Textbook: Part V	Literature Research Assignment #1 (cardiac physiology)	Nothing due
<b>Week 3</b> Jan 20 to Jan 24	<i>Marchant</i> Circulatory System Physiology Textbook: Part V	Case Study #1 (cardiac electrophysiology)	Group Case #1 Report
<b>Week 4</b> Jan 27 to Jan 31	<i>Marchant</i> Circulatory System Physiology Textbook: Part V	Case Study #2 (cardiac pharmacology)	Group Case #2 Report
<b>Week 5</b> Feb 3 to Feb 7	<i>Marchant</i> Circulatory System Physiology <i>Niyogi</i> Respiratory System Physiology Textbook: Part V	Literature Research #1 - Student Presentations; Intro to Lit Research Assignment#2 (renal physiology)	Literature Research Assignment #1 Summary & Presentation

<b>Week 6</b> Feb 10 to Feb 14	<i>Niyogi</i> Respiratory System Physiology & Regulation <u>Textbook</u> : Part V	Case Study #3 (respiratory physiology)	Group Case #3 Report
<b>Week 7</b> Feb 17 to Feb 21	Midterm Break <i>No lectures or labs scheduled</i>		
<b>Week 8</b> Feb 24 to Feb 28	<i>Niyogi</i> Osmoregulatory Physiology <u>Textbook</u> : Part VI	Case Study #4 (osmoregulatory physiology)	Group Case #4 Report
<b>Week 9</b> Mar 2 to Mar 6	<i>Niyogi</i> Osmoregulatory Physiology <u>Textbook</u> : Part VI	Midterm Exam (90 minutes; (to end of Respiratory System Physiology)	
<b>Week 10</b> Mar 9 to Mar 13	<i>Niyogi</i> Osmoregulatory Physiology & Regulation Digestive System Physiology <u>Textbook</u> : Chapter 6	Literature Research #2 - Student Presentations; Intro to Literature Research Assignment #3 (endocrine physiology)	Literature Research Assignment #2 Summary & Presentations
<b>Week 11</b> Mar 16 to Mar 20	<i>Niyogi</i> Digestive System Physiology <u>Textbook</u> : Chapter 6	<i>Lab Period</i> : Case Study #5a (gastrointestinal physiology)	Group Case #5a
<b>Week 12</b> Mar 23 to Mar 27	<i>Niyogi</i> Digestive System Physiology & Regulation <i>Marchant</i> Endocrine Physiology <u>Textbook</u> : Chapters 16 & 17	<i>Lab Period</i> : Case Study #5b (gastrointestinal physiology)	Group Case #5b Report
<b>Week 13</b> Mar 30 to Apr 3	<i>Marchant</i> Reproductive Endocrinology & Physiology	Literature Research #3 - Student Presentations (endocrine physiology)	Literature Research Assignment #3 Summary & Presentations
<b>Week 14</b> Apr 6	<i>Marchant</i> Reproductive Endocrinology & Physiology Course wrap-up		
	Final Exam during regular exam period (Apr 9 to 29)		

\* Additional readings may be assigned as the course proceeds. These will be noted during the lectures or in the lab folders as appropriate.

## Instructors:

### Contact Information:

Dr Tracy Marchant	room 120.3 CSRB wing Biology tracy.marchant@usask.ca	966-4420
Dr Som Niyogi	room 120.4 CSRB wing Biology som.niyogi@usask.ca	966-4453
Ms Sheri Fisher (lab coordinator/instructor)	room G77.3 Thorvaldson sheri.fisher@usask.ca	966-4431
Mr. Vladimir Kodzhahinchev	room 120 carrel 24 CSRB wing Biology vladimir.kod@usask.ca	

**Office Hours:** Generally-speaking, the instructors above will be available in their offices on a drop-in basis. However, please note that all instructors have other commitments that may take them away from their office. Specific appointments can be set by email or through a phone call. Email responses to specific questions about course material are at the discretion of each instructor; information about individual policies will be provided in the lecture or laboratory by each instructor.

**Instructor Profiles & Other Information:** Professors Marchant and Niyogi are regular faculty members in the Department of Biology. They both holds advanced degrees (MSc, PhD). Dr. Marchant teaches and conducts research in the general area of animal physiology. Dr. Niyogi teaches and conducts research in toxicology. Ms Fisher also holds an advanced degree (MSc) and is responsible for coordinating and teaching in the laboratories for BIOL 318. Mr. Kodzhahinchev is a PHD candidate working under Dr. Niyogi's supervision and will be a Teaching Assistant for the labs.

## Required Resources

### Textbooks

Hill, Wyse & Anderson. 2016. Animal Physiology 4 ed, Sinauer.

This is available from the University of Saskatchewan Bookstore:

[http://www.usask.ca/consumer\\_services/bookstore/textbooks](http://www.usask.ca/consumer_services/bookstore/textbooks)

Laboratory Instructions for BIOL 318 will be available as a free download from the course Blackboard.

### Electronic Resources

The laboratory portion of this course will require a working knowledge of computers and various computer programs, including MS Excel, Word and Powerpoint. Computers will be used extensively to search the internet and access University Library resources and prepare reports in the laboratory. You will need to access your University computer account during the laboratory; make sure you know your university nsid and password and how to log on to your account. Further details about the lab exercises are in the Blackboard lab folders.

### Downloads

These will be available as appropriate through the course Blackboard. The only document that you are required to download and read is the course syllabus. Powerpoint slides may be provided to you as a courtesy. You are not required to download or print these slides. While the

instructors will endeavour to have the lecture Powerpoint slides posted sometime in advance of the lecture, this will not be guaranteed.

## Supplementary Resources

From time to time, your instructors may make supplementary material available to you through the course Blackboard. This material will not replace the lecture or lab experience and you are encouraged to attend all lectures and take your own notes.

## Grading Scheme

Midterm Exam	20
Final Exam	45
Group Case Reports/Description (six X 2.5% each)	15
Literature Research Summary (three X 5% each)	15
Oral Presentation (one)	5
Total	100%

## Evaluation of Student Performance

### Midterm Exam

**Value:** 20% of final course grade

**Date:** Mar 4 (to be written at 2 pm during the lab period)

**Length:** 90 minutes

**Format:** a mix of multiple choice questions and those requiring a written answer.

**Description:** Will include lecture material to the end of Respiratory Physiology. Calculators allowed. No phones, laptops, tablets or other materials allowed.

### Final Exam

**Value:** 45% of final grade

**Date:** Consult the Final Exam Schedule when it is released.

**Length:** 3 hours

**Format:** a mix of multiple choice questions and those requiring a written answer.

**Description:** The exam is comprehensive in that it will cover all lecture material. However, material delivered since the midterm exam will be emphasized. Calculators allowed. No phones, laptops, tablets or other material allowed. Students should plan to be in Saskatoon during the final exam period (Apr 9 to 29) as the BIOL 318 final exam could be scheduled on any day during this period.

### Group Case Reports:

**Value:** 15% of final grade

**Due Date:** See Course Schedule for exact dates

**Format:** Each group of students will prepare five one-page reports about the case they studied in the lab. Each report is to be submitted electronically prior to the end of the lab period when the case was studied. For Case #5a, each group will prepare a powerpoint case description for their fellow students to analyze in the subsequent laboratory period

**Description:** Comprehensive information about the format and style to be used for these reports is contained in the lab folder on Blackboard and will be explained in detail during the

orientation lab period. Each report will consist of one page of writing plus a separate page for the references used to prepare the case report. Students are required to know and understand what constitutes plagiarism and the University's Regulations on Academic Student Misconduct (see below). Five cases will be studied by each group and each case report will be worth 2.5% of the final grade. The powerpoint case description in Lab 5a is to be prepared following the format of the other case descriptions used in the course and will consist of 5 to 7 powerpoint slides (worth 2.5%). The work from Labs 5a and 5b will be assessed by the instructors and other student involved with the cases.

**Publication of the Case Report:** Each group case report will be posted on the course Blackboard so that other students can read and learn from the case. The grade assigned to the report will remain confidential (ie will not be posted).

### Literature Research Summaries:

**Value:** 15% of final grade

**Due Date:** See Course Schedule for exact dates

**Format:** Each student will independently prepare a one-page summary of the research article they were assigned to study in the lab. Each summary is to be submitted electronically to their laboratory demonstrator prior to the start of the lab period when presentations are given on each research topic.

**Description:** Comprehensive information about the format and style to be used for these summaries is contained in the lab folder on Blackboard and will be explained in detail during the lab in week two of the course. Each summary will consist of one page of writing plus a separate page for the references used to prepare the summary. Students are required to know and understand what constitutes plagiarism and the University's Regulations on Academic Student Misconduct (see below). Three articles will be studied by each student and each summary will be worth 5% of the final grade.

**Publication of the Literature Research Summary:** Each summary will be posted on the course Blackboard so that other students can read and learn from the literature research assignment. The grade assigned to the summary will remain confidential (ie will not be posted).

### Lab Presentation:

**Value:** 5% of final grade

**Date:** See Course Schedule; exact dates are assigned randomly to each student.

**Format:** 20 minute Powerpoint presentation

**Description:** Each student will be required to give one presentation detailing the article they studied for a Literature Research Assignment. Presentation topics are assigned randomly in the lab orientation period.

**Publication of the Lab Presentation:** Each Powerpoint will be posted on the course Blackboard so that other students can read and learn from the presentation. The grade assigned to the presentation will remain confidential (ie will not be posted).

### Submitting Assignments/Feedback to Students

Students will work collaboratively with other group members to prepare a one-page summary of each case study assigned to them. The case reports will be graded by the instructors who will also watch for plagiarism. Reports will be graded and returned on a schedule such that students will have regular feedback about their work after they have submitted the first two reports. Each student must independently write a one-page summary for each of the three research articles assigned to them. These will be graded by the teaching assistant who may consult with Dr Marchant or Niyogi. Grades will be assigned based on the quality of the writing including formatting, grammar, spelling, scientific writing and other aspects of the report. Additional information about the format of the summaries is contained in the lab folder on

Blackboard; students must read this carefully. The oral presentation will be evaluated by the instructors and other students in the lab section. A rubric and weighting scheme for assessing the presentation will be posted on Blackboard. Presenters will be provided with written feedback about their performance. Marks from the midterm exam will be available approximately one week after the exam in advance of the last day to withdraw deadline.

### Lab Attendance Expectations

Students are expected to attend, and be on time, for all scheduled labs. A student who arrives late may be penalized by a 10% deduction on the learning assessment for that lab period, and in serious cases, may even be excluded from the laboratory session by the instructor. In that case, the student will receive a grade of zero for that lab activity.

It is impossible to schedule make-up labs for this course. Students who miss a lab period are assigned a mark of zero for the work that was to be completed during the missed lab period. Students are required to contact the course coordinator prior to the end of the lab period if they are too ill to attend the lab or are facing extenuating personal circumstances that requires them to be away from the University. When a lab is missed due to illness or personal circumstances, the marks associated with the missed lab exercise will be distributed to remaining course components as determined by the instructor. Note that each situation will be judged and determined separately. Similar procedures will be followed if a student is going to miss giving their scheduled lab presentation.

### Midterm and Final Examination Scheduling

The midterm must be written on the day scheduled. Students are required to contact Professor Marchant or Niyogi prior to the start of the midterm exam if they are too ill to attend the lab or are facing extenuating personal circumstances that requires them to be away from the University. Arrangements will be made to write the midterm exam at another time. The University Administration schedules final course examinations between April 9 to 29. Students should therefore avoid making prior travel, employment, or other commitments for this period. Alternate times to write the final course examination cannot be accommodated by the instructors.

**Students who miss the final exam must contact the College and apply for a deferred final exam.** Deferred exams may utilize a different format than the regular exam, at the sole discretion of the instructors.

Students are encouraged to review all examination policies and procedures:

<http://students.usask.ca/academics/exams.php>

Students planning on registering with the office for Access and Equity Services for Students (AES) must do so in accordance with AES procedures and deadlines (see information regarding Student Supports below).

### Recording of the Course

Students are not allowed to record any aspect of this course, except with the permission of the instructor or as provided for by arrangements with AES. Any recording made under AES provisions is to only be used for the personal learning of the student who made the recording.

### Copyright

Course materials are provided to students based on their registration in a class. Any material created by course instructors is the intellectual property of the instructors. This includes exams,

PowerPoint/PDF slides and other course notes. Additionally, other copyright-protected materials created by textbook publishers and authors may be provided to students based on license terms and educational exceptions in the Canadian Copyright Act (see <http://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>).

Before copying or distributing others' copyright-protected materials, students need to ensure that their use of the materials is covered under the University's Fair Dealing Copyright Guidelines available at <http://www.usask.ca/copyright/basics/copyright-policy/fair-dealing-guidelines/index.php>. For example, posting others' copyright-protected materials on the internet is not covered under the University's Fair Dealing Copyright Guidelines; doing so requires permission from the copyright holder. For more information about copyright, please visit <http://www.usask.ca/copyright/students/rights/index.php> or contact the University's Copyright Coordinator at [copyright.coordinator@usask.ca](mailto:copyright.coordinator@usask.ca).

Students should be aware that a violation of the university's copyright policies could be an instance of non-academic misconduct. For example, the practice of uploading or posting copyright-protected materials to course-sharing websites, depositories, or "drop boxes", without the permission of the copyright holder, could result in a charge of non-academic misconduct under the university's "Standard of Student Conduct in Non-Academic Matters" (see Student Conduct section below).

## Student Feedback

The Department of Biology or the course instructors may survey students regarding the course. This is generally done through an in-class assessment near the end of the course.

## University of Saskatchewan Grading System

The University has established a grading system to be used in all of its courses. Information on literal descriptors for grading at the University of Saskatchewan (reproduced below) can be found at: <http://students.usask.ca/academics/grading/grading-system.php>

**Exceptional (90-100)** A superior performance with consistent evidence of

- a comprehensive, incisive grasp of the subject matter;
- an ability to make insightful critical evaluation of the material given;
- an exceptional capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

**Excellent (80-90)** An excellent performance with strong evidence of

- a comprehensive grasp of the subject matter;
- an ability to make sound critical evaluation of the material given;
- a very good capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

**Good (70-79)** A good performance with evidence of

- a substantial knowledge of the subject matter;
- a good understanding of the relevant issues and a good familiarity with the relevant literature and techniques;
- some capacity for original, creative and/or logical thinking;
- a good ability to organize, to analyze and to examine the subject material in a critical and constructive manner.

**Satisfactory (60-69)** A generally satisfactory and intellectually adequate performance with evidence of

- an acceptable basic grasp of the subject material;
- a fair understanding of the relevant issues;



- a general familiarity with the relevant literature and techniques;
- an ability to develop solutions to moderately difficult problems related to the subject material;
- a moderate ability to examine the material in a critical and analytical manner.

**Minimal Pass (50-59)** A barely acceptable performance with evidence of

- a familiarity with the subject material;
- some evidence that analytical skills have been developed;
- some understanding of relevant issues;
- some familiarity with the relevant literature and techniques;
- attempts to solve moderately difficult problems related to the subject material and to examine the material in a critical and analytical manner which are only partially successful.

**Failure <50** An unacceptable performance

For information regarding appeals of final grades or other academic matters, please visit the Student Conduct and Appeals section of the University Secretary's webpages:

<https://secretariat.usask.ca/student-conduct-appeals/appeals-in-academic-matters.php>

## Student Conduct

### Integrity Defined

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary webpages (see below) and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

More information on what academic integrity means for students is found in the Academic Integrity webpages hosted by the University of Saskatchewan Library:

<https://library.usask.ca/academic-integrity.php>

### Policies on Academic Dishonesty, Academic Appeals and Course Delivery

Students are expected to undertake all aspects of their academic work in an ethical manner. Students are expected to submit their own individual work for academic credit, properly cite the work of others, and to follow all rules for examinations. Academic misconduct, plagiarism, and cheating will not be tolerated. Students are responsible for understanding the university's policies on academic integrity and academic misconduct. If any form of academic misconduct is discovered, appropriate disciplinary action will be taken.

Information about expectations and policies about student conduct at the University of Saskatchewan can be found at The Office of the University Secretary webpage. This webpage contains links to several important documents including the Student Discipline Policy, Student Academic Misconduct Regulations, Standard of Student Conduct in Non-Academic Matters, and Procedures for Student Appeals in Academic Matters (see weblinks below).

#### About Student Conduct:

<https://secretariat.usask.ca/student-conduct-appeals/index.php>

#### Appeals in Academic Matters:

<https://secretariat.usask.ca/student-conduct-appeals/appeals-in-academic-matters.php>

#### Academic Misconduct:

<https://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php>

#### Non-Academic Misconduct:

<https://secretariat.usask.ca/student-conduct-appeals/non-academic-misconduct.php>

A summary of University of Saskatchewan policies relating to academic courses is provided in the document: Academic Courses Policy on Class Delivery, Examinations, and Assessment of Student Learning <https://policies.usask.ca/policies/academic-affairs/academic-courses.php>

**Safety:**

Students are expected to work in a safe and responsible manner, to follow all safety instructions, and use any specified personal protective equipment as instructed. Students failing to behave in a safe manner will be asked to leave the laboratory.

## Student Supports

**Support Services for Arts & Science Students**

- Arts & Science Undergraduate Student Office (Arts 265)
- The Trish Monture Centre for Student Success (Arts 250)  
<https://artsandscience.usask.ca/undergraduate/advising/>
- Student Wellness Centre (3rd & 4th Floors, Place Riel):  
<https://students.usask.ca/health/>
- Financial Services: <https://students.usask.ca/money/>

**Student Learning Services**

Student Learning Services (SLS) offers assistance to U of S undergrad and graduate students. For information on specific services, please see the SLS web site:

<https://library.usask.ca/studentlearning/>

**Teaching, Learning and Student Experience**

The Teaching, Learning and Student Experience Unit (TLSE) focuses on providing developmental and support services and programs to students and the university community. For more information, see <https://teaching.usask.ca/about/people/vice-provost-teaching-learning-and-student-experience.php>

**Examinations through Access and Equity Services (AES)**

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with AES if they have not already done so. Students who suspect they may have disabilities should contact AES for advice and referrals. In order to access AES programs and supports, students must follow AES policy and procedures. For more information, check [www.students.usask.ca/aes](http://www.students.usask.ca/aes), or contact AES at 306-966-7273 or [aes@usask.ca](mailto:aes@usask.ca). They are located in Rm. E1, Administrative Building.

Students registered with AES may request alternative arrangements for mid-term and final examinations.

Students must arrange such accommodations through AES by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by AES.