UNIVERSITY OF SASKATCHEWAN

Department of Biology

COURSE SYLLABUS

COURSE TITLE: BIOL 224 — Animal Body Systems

COURSECODE: 40691		TERM:	Q2 Spring/Summer 2018
COURSE CREDITS:	3.0	DELIVERY:	Lecture & Practicum (Lab)
CLASS SECTION:	01	START DATE:	04 June
LECTURE LOCATION:	Rm 125 Biology Bldg.	LAB LOCATION:	G74 Thorvaldson Bldg.
LECTURE TIME:	8:30 to 10:50 am	LAB TIME:	1:30-4:20 pm
WEBSITE:	Via Blackboard		

Course Description

We will study the problems all animals overcome in order to survive and reproduce, with a focus on the various body systems that deal with environmental challenges. Prerequisites: BIOL 120. Note: BIOL 121 is strongly recommended. Students with credit for BIOL 203 or BIOL 217 or HSC 208 or PHSI 208 or BMSC 224 will not receive credit for BIOL 224.

Learning Outcomes

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

1. Understand the organization of the major body systems in vertebrate animals and those from a few relevant invertebrate examples;
2. Understand the basic concepts of organ system physiology and be to able link processes that occur at the cellular, tissue and organ levels with whole animal physiology;
3. Appreciate the role that evolutionary adaptation has played in the organization of the vertebrate body, and how homeostasis allows animals to respond to short term changes in their environment;
4. Learn how selected physiology variables can be measured in a laboratory setting and be able to explain experimental results in the context of basic physiological concepts;
5. Learn how to quantify and present scientific data by drawing and interpreting scientific graphs and tables, and writing descriptive figure legends;
6. Learn to work efficiently in a group setting.

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/university_secretary/LearningCharter.pdf
More information on University policies on course delivery, examinations and assessment of student learning can be found at:
http://www.usask.ca/university_secretary/council/academiccourses.php

Course Overview

The course consists of 2hr 20 min hours of lecture per day for a total of 14 days. We will take a break of about 10 minutes half way through the lecture each day, resulting in approximately 30 hours of face-to-face instruction in the lectures. Eight days of hands-on lab exercises (2 hrs 50 minutes per day) are also included. You will work in small groups to perform physiological experiments and analyze and present your data. These exercises provide a practical illustration of some of the main lecture concepts. Completion of the labs is a required course component.

Class Schedule

Day	**Lecture Instructor, Major Lecture Topics and Readings**	**Laboratory Activity Readings**	**Student Work Due/Other Types of Assessment**
1. Mon (June 4)	Chedrese and Schott: Introduction; Evolutionary History; Environments and Adaptation; Homeostasis	*No lab scheduled*	Nothing due
2. Tues (June 5)	Chedrese: Communication & Integration – Nervous System	*Lab Organization, Introduction to Excel & Labscribe* Lab Manual: Exercise 1	Prelab Quiz 1 Group lab report by end of lab period
3. Wed (June 6)	Chedrese: Nervous System	*Sensory Physiology* Lab Manual: Exercise 2	Prelab Quiz 2 Group lab report by end of lab period
4. Thurs (June 7)	Chedrese: Sensory systems	*Recording Action Potentials* Lab Manual: Exercise 3	Prelab Quiz 3 Group lab report by end of lab period
5. Fri (Jun 8)	Schott: Muscle and Skeleton; Chedrese: Osmoregulation	*Skeletal Muscle Physiology* Lab Manual: Exercise 4	Prelab Quiz 4 Lab Test 1 Group lab report by end of lab period
6. Mon (Jun 11)	Chedrese: Osmoregulation	*Osmoregulation* Lab Manual: Exercise 5	Prelab Quiz 5 Group lab report by end of lab period

7. Tues (Jun 12)	Schott: Respiratory System	*Respiratory Physiology* Lab Manual: Exercise 6	Prelab Quiz 6 Group lab report by end of lab period
8. Wed (Jun 13)	Schott: Circulatory System	*No Lab exercise scheduled*	*Study for midterm exam*
9. Thurs (Jun 14)	Schott:Metabolism and Body Temperature Regulation	*No Lab exercise scheduled*	*Study for midterm exam*
10. Fri (Jun 15)	Schott: Food, and Energy Balance	Midterm exam - during lab period 1:30 to 2:20 pm; room tba.	*No lab exercise scheduled* Midterm Exam (includes Osmoregulation)
11. Mon (Jun 18)	Chedrese: Endocrinology	*Circulatory System Physiology* Lab Manual: Exercise 7	Prelab Quiz 7 Group lab report by end of lab period
12. Tues (Jun 19)	Chedrese: Endocrinology	*Metabolism* Lab Manual: Exercise 8	Prelab Quiz 8 Lab Test 2 Group lab report by end of lab period
13. Wed (Jun 20)	Chedrese: Reproduction	*Review for Lab Exam* Lab Manual: all of it	Nothing due *Review lab* *Study for lab exam*
14. Thurs (Jun 21)	Chedrese: Development, course wrap-up	*Review for Lab Exam* Lab Manual: all of it	*No lab exercise scheduled* *Study for lab exam*
15. Fri (Jun 22)	Lab Exam 9:30 to 11:00 am in G74 Thorvaldson Bldg.		*Lab exam*
TBA, sometime Mon-Wed Jun 25-27	Final Exam		

Instructors:

Jorge Chedrese	jorge.chedrese@usask.ca Room 323 Biology	306-966-4446
Daniel Schott	daniel.schott@usask.ca	
Sheri Fisher Lab Instructor Coordinator	sheri.fisher@usask.ca Room G77.3 Thorvaldson	306-966-4431

Office Hours: The instructors will be available in their offices on a drop-in basis. However, please note that 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. Each instructor will provide information about individual policies in the lecture or laboratory.

Instructor Profiles & Other Information: Dr. Chedrese (MSc, PhD) is a regular faculty member in the Department of Biology, and teaches and conducts research on animal physiology. Dr. Schott (PhD) will present approximately half of the lectures for BIOL 224, and will be available to answer any questions the students may have. Ms. Fisher (MSc) coordinates all aspects of the BIOL 224 laboratories. Your lab group will also be assigned a laboratory demonstrator who will help you during the lab periods and grade your lab assignments and quizzes. The lab demonstrators work under Ms. Fisher's supervision and are senior undergraduate or graduate students at the university.

Required Resources

Textbooks

Biology - Exploring the Diversity of Life (3rd Canadian Edition) by Russell et al., Nelson Education Ltd., 2016. Copies of this textbook will be on reserve in the Natural Sciences Library.

Communication Systems in the Animal Body. Free online access TBA in class.

BIOL 224 Laboratory Manual (Spring 2018 edition must be purchased). An electronic version of the $25 manual must be purchased from the University of Saskatchewan Bookstore: www.usask.ca/consumer_services/bookstore/textbooks. You will be provided with a unique access code for the digital copy of your lab manual affixed to a sheet of paper. Each student registered in Biology 224 must purchase an access code for the lab manual. Students who fail to do so will be given a 0% on all pre-lab quizzes and group reports in the lab. The access code is linked to your registration in BIOL 224 and lab manual purchase will be monitored. Do not lose your access code, as you will have to purchase another. We recommend taking a photo of your access code in case you lose it. You may print one copy of the manual for your own use. You are not permitted to distribute the manual to others in any form, electronic or otherwise. To do so is considered copyright infringement and students who do so will be subject to disciplinary action in accordance with University of Saskatchewan academic conduct policies.

Electronic Resources

The laboratory portion of this course will require a working knowledge of Microsoft Excel and Microsoft Word speadsheet and word processor software, or a willingness to learn on one's own time: Students will use computers to collect and analyze data, and prepare reports in the laboratory. You will need to access your university computer account during labs – make sure you know your university nsid and password and how to log on to your account. Further details are in the lab manual.

Downloads

These will be available as appropriate through the course Blackboard website. The only document that you are required to download and read is the course *syllabus.* **Please note that some of the instructor's lecture slides may be provided to you as a courtesy.** You are not required to download or print these slides. While we will endeavor to have some of the lecture slides posted sometime before each lecture, we will not guarantee this. Each instructor will provide you with additional information about posted documents.

Supplementary Resources
From time to time, your instructors may make supplementary material available to you through the course Blackboard website. This material **will not replace the lecture or lab experience** and you are encouraged to attend all lectures and take your own notes. A number of paper-based resources for the laboratory may be placed on reserve for you in the Natural Sciences Library; Information about these is provided in the lab manual as appropriate.

Grading Scheme

Midterm Exam:	20
Final Exam:	45
Group Lab Reports:	8
Pre-Lab Quizzes:	3
Lab Tests:	9
Lab Exam:	15
Total:	100%

Evaluation of Student Performance

Midterm Exam
Value: 20% of final course grade
Date: June 15 (to be written starting at 1:30 pm in lab period)
Length: 50 minutes
Format: 40 multiple-choice questions; scan marked.
Description: Will include all lecture material up to the date of the midterm. Calculators allowed. No phones, laptops, tablets or other material allowed.

Final Exam
Value: 45% of final grade
Date: Consult the Final Exam Schedule
Length: 3 hours
Format: 100 multiple-choice questions; scan marked.
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.

Laboratory Group Reports
Value: 8% of final grade
Due Date: See Course Schedule
Format: These will mostly consist of figures and tables. Data obtained during the lab periods are to be organized and presented in a scientific manner in these reports.

Description: All group members are to participate in the preparation of these reports. Figures will be drawn using MS Excel. A scientific figure legend will be written and included with each graph. These must be printed and handed in to your lab demonstrator before the end of the lab period. Complete instructions about these group reports are contained in your lab manual.

Quizzes

Value: 3% of final grade

Date: See Course Schedule

Format: Eight online quizzes to precede each lab period, each worth 0.375% of the final grade.

Description: The pre-lab quizzes will be 10 minutes in duration and test material for the upcoming lab exercise. They will be made available online following the previous week's lab, and will consist of multiple choice, fill-in-the-blank, or true-false questions with answers to be submitted through Blackboard. The quizzes are to be completed by each student working individually, and will require use of the lab manual and textbook. Other reference material is allowed as needed. Additional information about the pre-lab quizzes is found in your lab manual.

Tests

Value: 9% of final grade

Date: See Course Schedule

Format: Two tests, worth 4.5% of the final grade.

Description: The tests will be 20 minutes in duration and test material from the previous lab exercises. The questions will be multiple-choice, fill-in-the-blank or require a short written answer. There may be calculations involved. Calculators allowed. No phones, laptops, tablets or other material allowed. Additional information about the lab tests is found in your lab manual.

Laboratory Exam

Value: 15% of final grade

Date: June 22 (9:30 to 11:00 am)

Format: This will be a mixture of short written answers, calculations and multiple-choice questions.

Description: The lab exam will be 1.5 hours in duration and test material from all previous lab exercises. Calculators allowed. No phones, laptops, tablets or other material allowed. Additional information about the lab exam is found in your lab manual and will be provided in the lab review session.

Submitting Assignments/Feedback to Students

One copy of each group lab report must be printed and turned in to the lab demonstrator not later than 4:30 pm in the lab period in which it is due. Barring unforeseen circumstances, we will endeavor to have the labs reports graded and returned near the beginning of the subsequent lab period. Grades will be assigned based on the quality of the data presentation and on the figure legends. Additional information about this is contained in the lab manual. Marks from machine-graded exams are usually available within one week. The multiple choice questions will not be posted after the exam, but correct answers will be discussed during a lecture and students will be encouraged to meet with the instructor to review their performance.

Late Assignments

Lab reports submitted after 4:30 pm will be assigned a grade of zero. There are no exceptions to this policy.

Attendance Expectations

Students are expected to attend all scheduled lab periods. 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 group lab report. Students are advised to consult the lab manual for further information about procedures to follow when they are too ill to attend the lab period or are facing extenuating personal circumstances.

Criteria That Must Be Met to Pass

Students must write the final exam in order to pass the course. Students who do not write the final exam will be assigned a final course grade of 49%, or lower depending on their performance in other aspects of the course, along with a grade comment of INF (Incomplete Failure). The final grade will be adjusted if a deferred final exam is written (see below).

Midterm and Final Examination Scheduling

Midterm and final examinations must be written on the date scheduled. Final course examinations will be announced by the administrations and will be held June 26 to 28; students should therefore avoid making prior travel, employment, or other commitments for this period. If a student is unable to write a midterm or the lab exam through no fault of his or her own for medical or other valid reasons, documentation must be provided and an opportunity to write the missed exam may be given. Note: students should consult the laboratory manual for information specific to missed laboratory assignments and quizzes. **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 University examination policies and procedures: http://www.usask.ca/calendar/exams&grades/examregs/

University of Saskatchewan Grading System

Students in BIOL 224 are reminded that 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/current/academics/grades/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

Integrity Defined (from the Office of the University Secretary)

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 Website 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.

All students should read and be familiar with the Regulations on Academic Student Misconduct (http://www.usask.ca/university_secretary/honesty/StudentAcademicMisconduct.pdf) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (http://www.usask.ca/university_secretary/honesty/StudentNon-AcademicMisconduct2012.pdf)

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at: http://www.usask.ca/university_secretary/pdf/dishonesty_info_sheet.pdf

Note: *Additional information about student misconduct specific to BIOL 224 is found in the laboratory manual. BIOL 224 students are required to read and understand the information about misconduct that is presented in the laboratory manual.*

Examinations through Disability Services for Students (DSS)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check http://students.usask.ca/current/disability/ or contact DSS at 966-7273 or dss@usask.ca. Students registered with DSS may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through DSS by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by DSS. Students who are in need of accommodation for other aspects of BIOL 224 must present the appropriate letter from DSS to the course instructors. Accommodation for the midterm, the final exam and the lab exam must be made through regular DSS procedures.

Examinations through Access and Equity Services (AES)

Students who are part of a Human Rights equity group or have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Access and Equity Services (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 DSS policy and procedures. For more

information, check https://students.usask.ca/health/centres/access-equity-services.php#AssistiveTechnologyRoom or contact DSS at 966-7273 or aes@usask.ca. Students registered with DSS may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through AES by the stated deadlines. Instructors will ensure that examinations are delivered to AES for students who are being accommodated by the deadlines established by AES. Students who are in need of accommodation for other aspects of BIOL 224 must present the appropriate letter from AES to the course instructors. Additionally, see the lab manual for details on accommodations for the two in lab tests. Accommodation for the midterm, the final exam and the lab exam must be made through regular AES procedures.