UNIVERSITY OF SASKATCHEWAN

COURSE SYLLABUS

COURSE TITLE:	BIOL 331 Plant Physiology		
COURSE CODE:	82699	**TERM:**	Fall 2019
COURSE CREDITS:	3.0	**DELIVERY:**	Lecture & Practicum (Lab)
CLASS SECTION:	01	**START DATE:**	September 4th 2019
CLASS LOCATION:	Biology 124	**LAB LOCATION:**	G74B Thorvaldson Building
CLASS TIME:	MWF 8:30 AM to 9:20 AM	**LAB TIME:**	Thursdays 1:30PM to 5:20PM
WEBSITE:	Via Course tool (Blackboard)		Fridays 1:30PM to 5:20PM

Course Description

This course examines aspects of plant physiology including water relations, utilization of mineral nutrition, translocation, photosynthesis and respiration.

Prerequisites: Biology 222

Learning Outcomes

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

1. Gain an understanding of the main physiological concepts that control over plant growth and development.
2. Understand the correlation between plant physiological fundamentals and other fields in biology
3. Learn aspects of plant physiology by performing hands-on experiments: Analyze and communicate the results.
4. Improve the ability to read and interpret current scientific literature with criticism.
5. Apply plant physiological processes to explain solutions that plants face many environmental challenges.

NOTE:

Information on literal descriptors for grading at the University of Saskatchewan can be found at: http://students.usask.ca/academics/grading/grading-system.php

Please note: There are different literal descriptors for undergraduate and graduate students.

More information on the Academic Courses Policy on course delivery, examinations and assessment of student learning can be found at:

http://policies.usask.ca/policies/academic-affairs/academic-courses.php

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

Course Overview

This course comprises 50 minutes lecture, three times per week, beginning on September 5, 2018. And this class includes a weekly lab session, starting on September 13th, 2018. The course provides students with a broad range of principles in plant physiology: water relations, xylem and phloem-mediated transport, photosynthesis, respiration, mineral nutrition and plant hormones.

Instructors

Contact Information:

Prof. Byung-Kook (Brian) Ham **Instructor**	#220.9 Collaborative Sciences Research Building	(306) 966-3721 byungkook-brian.ham@usask.ca
Jacey Bell **Lab Coordinator**	#118 W.P. Thompson Biology Building	(306) 966-4493 jacey.bell@usask.ca

Office Hours:

By appointment

Required Resources

Textbook: Plant Physiology and Development, 6th edition by Taiz, Zeiger, Møller and Murphy. Sinauer Publishing

Suggested Lecture Topics and Tentative Lecture Schedule

Water Balance Sep, 4-23
Components of water potential;
Osmosis;
Water movement in plants;
Atmosphere-plant-soil continuum;
Energy balance (plant and environment) and water stress;

Mineral Nutrition and Nutrient Assimilation Sep, 25-Oct, 11
Ionic requirements;
Biochemical reactions for nutrient assimilation;

Midterm Exam (Review and exam) Oct, 14-18

Solute Transport Oct, 21-23
Principles of solute transport in plants;
Transport in roots;
Phloem transport;

Photosynthesis Oct, 25 - Nov, 22
Carbon metabolism – C_3 and C_4;

Control of carbon allocation;

Respiration Nov, 25 - Nov, 27
Glycolysis;
Function of mitochondria;

Plant Hormone Nov, 29 – Dec, 2

Final Exam Review Dec, 4

Final Exam

- **Midterm Break week: Nov, 11-15**

Lab class information:

A lab manual and schedule will be posted to the course tool (Blackboard).

Lecture Materials

Lecture materials will be available via the course tool (Blackboard). Normally, the instructor will post lecture notes before a lecture, however, depending on the course progress, students may download some lecture notes after a class.

Grading Scheme

Mid-term exam	25
Final term exam	40
Lab reports	25
Group presentation	10
Total	100%

Evaluation Components

Midterm Exam:

Value: 25% of final grade
Date: During one of the lecture time from October 15 – 19, 2018.
Type: Combination of multiple choice and answering written questions.
Description: Based on all lecture topics before the mid-term exam. **Note that no phone, laptop, tablet or other electronic or textbook are allowed**. Students should bring their valid U of S student identify card with pencils and erasers.

Final Exam

Value: 40% of final grade
Date: Consult Final Exam Schedule
Length: 3 hours
Type: Combination of multiple choice and answering written questions.
Description: The final exam is comprehensive in that it will cover all lecture materials. However, lecture topics delivered after the midterm exam will be emphasized. **Note that no phone, laptop, tablet or other electronic or textbook are allowed**. Students should bring their valid U of S student identify card with pencils and erasers.

Laboratory Reports

Value: 25% of final grade
Date: See Laboratory Schedule
Type: Written lab reports
Description: Students will prepare written lab reports with the desired format.

Group Presentations

Value: 10% of final grade
Date: Scheduled by groups during class periods
Type: Group oral presentation
Description: Students will make small groups to have a presentation of recently published scientific literatures, involved in plant physiology.

Criteria That Must Be Met to Pass

Students must complete all course elements (midterm exam, final exam, laboratory reports and group presentation) in order to pass this course.

Attendance Expectations for Laboratory Classes

Students should attend all scheduled lab classes and complete all lab experiments during the lab periods. There will be no scheduled make-up labs. Students should submit lab reports on time; late, or no submission of lab reports without a valid excuse will cause a grade of "zero".

Student Feedback

Grades of Midterm and final exam will be communicated through the course tool (Blackboard). Appointment will be required for students to review exams. Students will usually get back feedbacks of their lab reports within one week.

Copyright

Course materials are provided to you based on your registration in a class, and anything created by your professors and instructors is their intellectual property, unless materials are designated as open education resources. 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 you 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 you copy or distribute others' copyright-protected materials, please ensure that your use of the materials is covered under the University's Fair Dealing Copyright Guidelines available at https://library.usask.ca/copyright/general-information/fair-dealing-guidelines.php. For example, posting others' copyright-protected materials on the open web is not covered under the University's Fair Dealing Copyright Guidelines, and doing so requires permission from the copyright holder.

For more information about copyright, please visit https://library.usask.ca/copyright/index.phpwhere there is information for students available at https://library.usask.ca/copyright/students/rights.php, or contact the University's Copyright Coordinator at mailto:copyright.coordinator@usask.ca or 306-966-8817.

University of Saskatchewan Grading System (for undergraduate courses)

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/secretariat/student-conduct-appeals/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/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.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/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf

Examinations with Access and Equity Services (AES)

Students who 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 AES policy and procedures. For more information, check www.students.usask.ca/aes, or contact AES at 306-966-7273 or aes@usask.ca.

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.

Student Supports

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 http://library.usask.ca/studentlearning/.

Student and Enrolment Services Division

The Student and Enrolment Services Division (SESD) focuses on providing developmental and support services and programs to students and the university community. For more information, see the students' web site http://students.usask.ca.

Financial Support

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact Student Central (https://students.usask.ca/student-central.php).

Aboriginal Students Centre

The Aboriginal Students Centre (ASC) is dedicated to supporting Aboriginal student academic and personal success. The centre offers personal, social, cultural and some academic supports

to Métis, First Nations, and Inuit students. The centre is also dedicated to intercultural education, brining Aboriginal and non-Aboriginal students together to learn from, with and about one another in a respectful, inclusive and safe environment. Students are encouraged to visit the ASC's Facebook page (https://www.facebook.com/aboriginalstudentscentre/) to learn more.

International Student and Study Abroad Centre

The International Student and Study Abroad Centre (ISSAC) supports student success in their international education experiences at the U of S and abroad. ISSAC is here to assist all international undergraduate, graduate, exchange and English as a Second Language students and their families in their transition to the U of S and Saskatoon. ISSAC offers advising and support on all matters that affect international students and their families and on all matters related to studying abroad. Please visit students.usask.ca for more information.