UNIVERSITY OF SASKATCHEWAN

Department of Biology

BIOL 120 SYLLABUS

COURSE TITLE:	BIOL 120.3 – The Nature of Life		
COURSE CODE:	87288	TERM:	Fall 2019
COURSE CREDITS:	3.0	DELIVERY:	Lecture & Practicum (Lab)
CLASS SECTION:	93 + L91 + 15	START DATE:	Thursday, September 5th
CLASS LOCATION:	Arts Building, Room 109		
CLASS TIME:	1:00 to 2:20 pm Tuesdays and Thursdays (T/Th)		
TUTORIAL LOCATION:	Agriculture Building, Room 2E11		
TUTORIAL TIME:	10:00 to 11:20 am Thursdays (Th)		
LAB LOCATION:	Biology Building, Room 204		
LAB TIME:	9.00 to 11.50 am Tuesdays (T)		
WEBSITE:	through Blackboard, by way of https://paws.usask.ca/		

Course Description

An introduction to the underlying fundamental aspects of living systems: covering cell biology, genetics and the evolutionary processes which lead to complex, multi-cellular life forms.

Prerequisite(s): Biology 30 or BIOL 90 or BIOL 107 or BIOL 108.

Note: Chemistry 30 is strongly recommended. Students with credit for BIOL 110 will not receive credit for BIOL 120.

Instructor Contact Information

Lecturer:

Daniel Schott — daniel.schott@usask.ca
office hours after each lecture or by appointment

Lab Coordinator:

Mr. Paul Dick, M.Sc. — Rm 216, Biology Building
(306) 966-4423
paul.dick@usask.ca

Coordinator for Mindtap and SARA:

Mr. James Bush, M.Sc. — Rm 118, Biology Building
james.bush@usask.ca

Land Recognition

We acknowledge we are on Treaty Six territory and the homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another. We wish you safe, productive, and respectful encounters during your studies.

ISAP Community Commitments

Arts & Science | Indigenous Student Achievement Pathways (ISAP) programming offers a unique opportunity for participating Indigenous students to experience an academically robust, culturally aware, small-class environment early in their undergraduate journey. ISAP is structured on the Learning Communities (LC) model and has fewer than 90 seats available each term. As a student who has successfully secured a seat in the ISAP program, you have committed to positioning yourself as an active member of our community for learning.

Regular attendance, timely communication with your instructors and teaching assistants, and active classroom contributions are expected throughout the term and will contribute to a positive and success-oriented learning experience for you and your peers.

With these goals in mind, we use a *universal attendance and early alert system*. Students who have three unexcused absences or fail to progress in their studies by meeting course deadlines will be contacted by an academic advisor who will co-develop a support plan for continued studies, and/or initiate withdrawal from ISAP courses. Note: withdrawal from courses may have implications for future post-secondary enrollment, and does not excuse responsibility for fees and tuition charged during registration in ISAP or general section courses.

Communication with ISAP, the College of Arts & Science, and the University of Saskatchewan is an important step in charting and navigating your student experience. PAWS is the official method of communication for ISAP, the College, and the University – *please check your PAWS email account and announcement feed daily*.

Course Overview

This course is designed to introduce you to the vast and exciting field of biology, with a focus on events that are not normally visible to the naked eye. Covering topics in cell biology, genetics and evolution, BIOL 120.3 is one of two foundation courses for biology majors and for students going into Natural Sciences (Program C). BIOL 120.3 also counts towards the biology requirements of a number of programs in different colleges across campus. BIOL 121.3 - The Diversity of Life - is the sister course to BIOL 120.3, and focuses on biological diversity, evolution, adaptations of organisms to specific environments, and the factors influencing changes in biodiversity over time and space.

Learning Outcomes

By the end of BIOL 120.3, you should be able to describe, classify, and discuss aspects of cell theory, cell division, genetics, bioenergetics, and the molecular basis for variation and natural selection. The laboratory portion of the course will help link these topics together with hands-on exercises. After completing the lab section of the course, you will know how to use a microscope to see cells and tissues and how to solve basic genetics problems.

Instructional Resources: Textbook and Lab Manual

The required textbook for BIOL 120.3 is *Biology - Exploring the Diversity of Life (3rd or 4th Canadian Edition)* by Russell *et al.*, Nelson Education Ltd. This textbook is available from the U of S Bookstore in various formats, which all contain Mindtap and a copy of the e-text. There is a special code required in order to access Mindtap and the e-text, which will be made available early in Term 1 by Mr. James Bush.

There is a smaller hard-copy version (known as Volume 1), which mostly contains the chapters used in BIOL 120.3, alone. The textbook is available in its full length (for students who also plan on taking BIOL 121.3 and/or 224.3). Copies of the textbook will be available from the Reserve Desk in the Science Library, for short-term, in-library use.

Note that the textbook will be referred to regularly during lectures both in terms of content and for the use of visual aids. It is also helpful for reviewing the material. *You will not need to bring your textbook to class*. The textbook material that you are responsible for is outlined on the second-last page of this syllabus and will be the core testable material for the course. The lectures are intended to highlight and reinforce key concepts. Please see the *Learning Objectives Summary*, which will be posted on Blackboard with this outline, for a more detailed description of the topics you will be responsible for on the midterm lecture exam and final exam. All regular, on-campus sections of this course will sit common midterm and final exams.

The BIOL 120.3 Lab Manual (2019-20 Edition) is required for the course, and must be brought to each lab session. It is available for purchase from the U of S Bookstore.

Online Resources

There are several online resources to help support your learning in BIOL 120.3. We highly recommend the use of these resources as a means to help increase your performance and success in this course.

Blackboard Learn (https://bblearn.usask.ca) is where you will be able to access the course's detailed Learning Objectives, some of the instructor's lecture notes (at the discretion of each instructor), and any other resources from your instructor.

When purchasing a new copy of the textbook from the U of S Bookstore, the individual student also receives access to an online platform termed Mindtap. This platform provides access to a digital copy of the textbook, and to other resources like animations and self-tests. Note that Mindtap platform **will *not* be** used for any mandatory, online quizzes in BIOL 120.

Structured Study Sessions (Student Learning Services)

BIOL 120 Structured Study Sessions are weekly peer-led* study sessions that run throughout the term. These regularly scheduled study sessions give you the opportunity to review and complete exercises on the course material, revisit more difficult concepts, and practice your exam-writing skills through mock exam sessions for the midterm and final exams.

All BIOL 120 students are welcome to attend structured study sessions. Pre-registration is not required, and attendance is free. All that you need to do is show up to the session at the scheduled time and location and be open to learning! Watch your course Blackboard site for the schedule of sessions.

*Note: Experienced students who have already completed BIOL 120.3, and achieved an excellent grade run the structured Study Sessions. Research has shown that students, who attend Structured Study Sessions, on average, achieve higher grades than those who do not.

Student Advice Recommender Agent (Sara)

Each week through Blackboard, you will receive tailored, personalized advice from SARA. This advice will guide you to additional University and online resources to help you succeed in this course.

Student Review and Course Preparation (Purple Pages)

There is prerequisite material that will not be covered directly in lectures. This material is expected knowledge from high school courses. Students should review this information ahead of time because it is important for the understanding of many basic biological topics we will cover.

In Russell *et al.*, you will find this section near the middle of the book denoted by the purple colouring (pgs. F1-44) – for that reason, these are known as "The Purple Pages". This section contains basic information about the chemical and physical foundations of Biology, as well as a review of the macromolecules that make up living things (proteins, nucleic acids, carbohydrates and lipids). **Knowledge of much of this information will be needed to understand course content and answer questions on the lab quizzes, and the lecture midterm and final exams.**

Evaluation

Lecture Examinations: *Students must bring their current University of Saskatchewan student card to all exams and be prepared to present it for verification purposes*. Also bring an HB pencil plus an eraser.

It is forbidden for students to use any type of electronic device during an exam (for example: cell phone, dictionary, translator, head-phones, etc.) See the academic honesty section (Integrity Defined) below.

Midterm Lecture Exam to be held outside of class time on the evening of **Wednesday, October 16th 2019 from 5:30-6:30 pm**, at a location to be announced. In the event that you have a legitimate U of S timetabling conflict, you must contact your instructor right away in order to make arrangements for an alternate date for you to write a Deferred Midterm Lecture Exam. If you are absent from the **October 16th** exam due to a medical emergency or another exceptional circumstance, you must advise your instructor within THREE WORKING DAYS of the missed exam providing explanatory documentation to initiate discussion about whether you qualify for a Deferred Exam. If you do not advise your instructor within three working days, or do not have an acceptable excuse, a grade of zero will be assigned for the Lecture Midterm Exam.

The **Final Lecture Exam** will be arranged by the Registrar's Office to take place within the exam period of **December 7th – 23rd, 2019**. The final exam schedule for Term 1 typically becomes available by late October. Accommodations will **not be made** for students making travel arrangements during this time frame. If a student is absent from the Final Lecture Exam for a legitimate reason, within THREE WORKING DAYS of the missed exam, the student may apply for consideration of a Deferred Final Lecture Exam to the Dean's Office of the College in which the student is registered.

Laboratory Examinations: There are two Laboratory Exams, which you will write in your lab slot. Lab Exam 1 will be on **October 8th, 2019**. Lab Exam 2 will be written on **November 26th, 2019**. Consult the 2019-20 Lab Manual for the procedure to follow for a missed lab or Lab Exam.

There are other regular assignments and quizzes required for successful completion of the laboratory component of this course. These will be outlined for you during the first lab.

Grades

The final course grade is calculated as follows:

Lecture Midterm Exam	15%
Lecture Final Exam	35%
Lab Assignments and Quizzes	20%
Lab Exam 1	15%
Lab Exam 2	15%
TOTAL	**100%**

Important Academic Dates

Tuesday Sept. 17th – Last day to withdraw from Term 2 (Fall) classes with 100% tuition credit.
Tuesday Sept. 24th – Last day to withdraw from Term 2 (Fall) classes with 75% tuition credit.
Tuesday Oct. 1st – Last day to withdraw from Term 2 (Fall) classes with 50% tuition credit.
Friday Nov. 15th – Last day to withdraw from Term 2 (Fall) classes.

Laboratories

Labs begin in the week of September 9th, 2019. PAWS registration will give you a time and day of the week for your lab section. Room assignments are made by the Lab Coordinator and will be posted on Blackboard immediately before your first scheduled lab. Hard copies of the lists also will be posted on the glass-covered bulletin board outside Biology Rm. 202, on the second floor of the Biology Building. Students are expected to attend, and be prepared for, all scheduled labs, lab reviews and lab exams. The general lab schedule is provided on the final page of this syllabus.

The 2019-2020 edition of the Lab Manual for Biology 120.3 is **required for all labs**. Please make sure that you have read the lab instructions and are prepared for the assigned exercises before going to each of your scheduled lab sessions. Any other questions regarding the lab should be directed to the Lab Coordinator in Rm. 216 of the Biology Building.

Tutorials

Tutorials begin on Thursday, Sept 12. The tutorials are meant to give students an opportunity to review the laboratory and lecture material in a more flexible, informal setting. Attendance is expected.

Students Writing Examinations with Access And Equity Services (AES)

Students who suspect they may have disabilities should contact AES for advice and referrals. 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. 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 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 examinations for students who are being accommodated by AES, by the deadlines established by AES.

Student Supports

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/

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:
https://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

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 to learn more:
https://www.facebook.com/aboriginalstudentscentre/

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.

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 behaviour 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 be familiar with the Regulations on Academic Student Misconduct

https://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php#StudentAcademicMisconductRegulations

and

https://secretariat.usask.ca/documents/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.

For more information on what academic integrity means for students, see the *Academic Integrity Handout* linked to “Academic Misconduct” in the Student Conduct and Appeals section of the Office of the University Secretary website at:
https://www.engr.usask.ca/classes/ME/413/dishonesty_info_sheet.pdf

Textbook Chapters and Sections

Please note: Materials in the following sections from the textbook by Russell *et al.* constitute all of the testable material for the lecture exams. The lecture presentations are meant to highlight and synthesize essential concepts, and to provide opportunities for class discussion and interaction.

Also, as mentioned above, the "purple pages" at the centre of the textbook covers expected knowledge from high school courses. Students should review this information ahead of time because it's important for understanding the course material!

Chapters and sections in the **4th Cdn. Edn. Russell *et al*: *Biology – Exploring the Diversity of Life***

Chapter 2 – The Cell: an Overview – §2–2.5c
Chapter 7 – Cell Cycles – §7–7.4b
Chapter 8 – Genetic Recombination (Meiosis) and Life Cycles – §8.3a-d
Chapter 21 – Defining Life and its Origins – §21–21.5d, 21.6c, 21.7b,c
Chapter 3 – Energy and Enzymes – §3–3.5d, 3.6a, 3.6d
Chapter 4 – Cell Membranes and Signalling – §4–4.6b
Chapter 9 – The Chromosome Basis of Mendelian Inheritance – §9–9.2f
Chapter 10 – Genetic Linkage, Sex Linkage, and Non-Mendelian Inheritance – §10–10.2d, 10.4a–d
Chapter 11 – DNA Structure, Replication, and Repair – §11–11.3h
Chapter 12 – Gene Structure, Expression, and Mutation – §12–12.5a
Chapter 5 – Cellular Respiration – §5–5.7d
Chapter 6 – Photosynthesis – §6–6.4c

Some students may have access to the 3rd Cdn. Edn., which was used in BIOL 120 for the past few years. Although the textbook publisher has made some changes to the new 4th Edn., here are the relevant parts of that textbook which were utilized in BIOL 120 in the past. Please note that the 4th Edn., of the textbook is available for short-term loan from the Reserve Desk of the Science Library.

Chapters and sections in the **3rd Cdn. Edn.** Russell *et al*: *Biology – Exploring the Diversity of Life*

Chapter 2 – The Cell: an Overview – §2–2.5c
Chapter 8 – Cell Cycles – §8–8.4
Chapter 9 – Genetic Recombination (Meiosis) and Life Cycles – §9.3a-d
Chapter 3 – Defining Life and its Origins – §3–3.5f
Chapter 4 – Energy and Enzymes – §4–4.5d, 4.6a, 4.6d
Chapter 5 – Cell Membranes and Signalling – §5–5.6b
Chapter 10 – Mendel, Genes, and Inheritance – §10–10.2
Chapter 11 – Genes, Chromosomes, and Human Genetics – §11–11.2
Chapter 12 – DNA Structure, Replication, and Organization – §12–12.3
Chapter 13 – Gene Structure and Expression – §13–13.4
Chapter 6 – Cellular Respiration – §6–6.7d
Chapter 7 – Photosynthesis – §7–7.4c

The Final Lecture Exam is comprehensive and covers all the testable material outlined in the textbook sections above and described in the Learning Objectives for this course.

Anticipated Course Schedule (subject to change)

Lectures for Section 93 (T/Th 1:00-2:20 pm in Rm 109, Arts Building) and Labs

	Lecture Topic	Lab Number and Topic
Week 1 Sept. 5	Introduction; Cell Biology	**NO LAB**
Week 2 Sept. 10 and 12	Cell Biology	1. Introduction, Microscopy and Cells
Week 3 Sept. 17 and 18	Cell Biology; Cell Cycle	2. Eukaryotic Cell Structure and Function
Week 4 Sept. 24 and 26	Cell Cycle; Meiosis	3. Osmosis and Cell Division
Week 5 Sept. 31, Oct. 3	Origin of Life; Energy	4. Sexual Life Cycles and Meiosis
Week 6 Oct. 8 Oct. 10	 Thermodynamics Enzymes	**Lab Exam 1**
Week 7		**NO LAB**
Oct. 15 and 17	Membrane Structure	
Oct. 16	**Midterm Lecture Exam – Held from 5:30-6:30pm, outside of class time**. Location will be announced.	
Week 8 Oct. 22 and 24	Membrane Function Mendelian Genetics	5. Introduction to Genetics
Week 9 Oct 29 and 31	Human Genetics, DNA Structure and Replication	6. Human Genetics and Gene Linkage
Week 10 Nov. 5 and 7	Gene Expression	7. Biotechnology: Techniques and Applications
Week 11 Nov. 11-15	**Reading Week Break (No Lectures or Labs)**	
Week 12 Nov. 19 and 21	Cellular Respiration	Review Lab
Week 13 Nov. 26 and 28	Photosynthesis	**Lab Exam 2**
Week 14 Dec. 3 and 5	Metabolism; Review	**NO LAB**

FINAL LECTURE EXAM: To be announced, Dec 7 - 23, 2019. Date and location of the **3-hour** BIOL 120.3 Final Lecture Exam will be announced by the Registrar's Office.