



## COURSE SYLLABUS

<b>COURSE TITLE:</b>	Biology 120 The Nature of Life		
<b>COURSE CODE:</b>	82455	<b>TERM:</b>	1
<b>COURSE CREDITS:</b>	3	<b>DELIVERY:</b>	Lecture & Practicum (Lab)
<b>CLASS SECTION:</b>	97		
<b>CLASS START DATE:</b>	Sept. 7 <sup>th</sup> , 2021	<b>LAB START DATE:</b>	Sept. 14 <sup>th</sup> , 2021
<b>CLASS LOCATION:</b>	St. Peter's College	<b>LAB LOCATION:</b>	St. Peter's College
<b>CLASS TIME:</b>	Tues. 9 AM	<b>LAB TIME:</b>	Tues., 1 PM or 4 PM
<b>WEBSITE:</b>	<a href="http://www.usask.ca">www.usask.ca</a> and <a href="http://www.bblearn.usask.ca">www.bblearn.usask.ca</a>		

### Land Acknowledgement

As we engage in Remote Teaching and Learning, we would like to acknowledge that the St. Peter's College and the Saskatoon campus of the University of Saskatchewan 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 would also like to recognize that some may be attending this course from other traditional Indigenous lands. We ask that you take a moment to make your own Land Acknowledgement to the peoples of those lands. In doing so, we are actively participating in reconciliation as we navigate our time in this course, learning and supporting each other.

### Instructor Information

#### Contact Information

Kim Cross

[kim.cross@usask.ca](mailto:kim.cross@usask.ca)

#### Office Hours

30 minutes before lecture and 30 minutes following lecture, 30 minutes following lab. If you cannot attend these office hours, please email questions between Monday to Thursday. I unfortunately cannot guarantee emails will be answered between Friday to Sunday. If urgent, please email me again or contact the College and ask them to pass on a message. Webex/Zoom meetings can also be set up, if more in-depth explanations are required.

### Remote Learning Context

Due to the complex circumstances presented by the pandemic, the delivery of this course may take many forms and may change over time. Elements of remote learning may be required by some, or all, students for portions of the course. As participants in this class please act with empathy and care toward other students, the instructors and university staff. All participants wish for the best possible outcome in this class.

## Course Description

This course is designed to introduce the student 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. Prerequisites: 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.

## Learning Outcomes

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

1. Improve critical thinking skills and problem-solving abilities.
2. Be able to describe, classify, and discuss aspects of cell theory.
3. Be able to describe, classify, and discuss aspects of cell division and genetics.
4. Be able to describe, classify, and discuss aspects of the molecular basis for variation and natural selection.
5. Be able to describe, classify, and discuss aspects of enzymes and bioenergetics.
6. Obtain laboratory experience to help link these topics together, with hands-on exercises leading to understanding the use of microscopes to visualize cells and tissues, and how to solve basic genetics problems.

Information on literal descriptors for grading undergraduate students at the University of Saskatchewan can be found at: <https://students.usask.ca/academics/grading/grading-system.php#GradingSystem>. 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: <https://policies.usask.ca/policies/academic-affairs/academic-courses.php#AuthorizationandApproval>. 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: <https://teaching.usask.ca/documents/vpt/LearningCharter.pdf>

## Course Overview

In an average week, Biology 120 will require 3 hours of lecture, 3 hours of lab and a **minimum** of 3 hours of study. For a detailed outline, please pay attention to the schedule at the end of this document. The lecture & labs will be delivered using a blended model of face to face mixed with on-line and web-based activities, at/from St. Peter's College, Muenster Saskatchewan. Reading the textbook and lab manual prior to lecture and lab, asking questions during lecture and lab, and generally engaging in the subject material is extremely beneficial.

## Required Resources

### Textbooks/Readings

*BIOLOGY: Exploring the Diversity of Life: Volume 1, 4th Can. Ed.*, by Russell, Nelson Pub. (either printed copy or e-text). Required. **Important note for this off-campus section:** Mindtap code is not required for this section of Biology 120.3, therefore used copies, or older editions, can be purchased to save money. **Please note:** If students intend to enroll in Biol 121 or Biol 224 it is cheaper to buy the full text. Please pay attention to the 'purple pages', F2 to F56, in the textbook. These are mandatory learning requirements, but there will not be face to face time dedicated to these pages. There will be a web-based lecture posted on Canvas covering some (not all) of the mandatory 'purple pages' material to assist in learning the material. All mandatory materials will have questions on exams.

*2021-2022 Lab Manual for Biology 120.3. University of Saskatchewan, Biology Department.* Required. The lab manual should be read prior to each lab, to ensure all work is completed within the lab time.

Textbooks and lab manuals are available from the University of Saskatchewan Bookstore: <https://bookstore.usask.ca/>. Reading the textbook prior to lecture and the lab manual prior to lab will ensure greater understanding of the material. General textbook readings from *Biology – Exploring the Diversity of Life (4<sup>th</sup> Can. Ed.)*

### Purple Pages

Chapter 21 – Defining Life and its Origins – §21–21.5d, 21.6c, 21.7b,c

Chapter 2 – The Cell: an Overview – §2–2.5c

Chapter 4 – Cell Membranes Structure and Function – §4–4.6b

Chapter 7 – Cell Cycles – §7–7.4b

Chapter 8 – Genetic Recombination (Meiosis) and Life Cycles – §8.3a-d

Chapter 9 – The Chromosome Basis of Mendelian Inheritance – §9–9.2f

Chapter 10 – Linkage, Sex Linkage, & Other Inheritance Models – §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 3 – Energy and Enzymes – §3–3.5d, 3.6a, 3.6d

Chapter 5 – Cellular Respiration – §5–5.7d

Chapter 6 – Photosynthesis – §6–6.4c

*Downloadable note packages, for Section 97 students.* Required. The instructor for this section of Biology 120.3 will provide a full set of downloadable note packages on Canvas. These packages are structured in a reverse-lecture fashion. What does that mean? Students should be able to download the notes a week before the scheduled lecture and use resources to fill in the notes, prior to coming to class. Once in class students can spend more time listening or asking questions to clarify points and understanding. The lecture presentations are meant to highlight and synthesize essential concepts, and to provide opportunities for class discussion and interaction. This method of note taking, and class discussion, significantly increases student engagement in the material, thereby increasing knowledge and understanding of the material. Additionally, a more specific list of textbook readings can be found at the beginning of each note package.

## Electronic Resources, Downloads & Supplementary Resources

Canvas is where students will be able to access the course's detailed Learning Objectives, recorded video lectures, lecture notes, lab materials, and any other resources.

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:** Mindtap platform will not be used for your section, or for any mandatory online quizzes in BIOL 120; therefore, used textbook copies or older editions can be used.

There are several online resources to help support student learning in Biol120. The use of these resources can help increase student performance and success in this course. Warning: always use the course notes to determine the relevance of the information found outside the main resources provided.

Students are reminded of the importance of having the appropriate technology for remote learning. The list of recommendations can be found at <https://students.usask.ca/remote-learning/tech-requirements.php>

## Evaluation

5 Lab Assignments	25%
1 Lab Exam	25%
2 Lecture Online Quizzes	10%
1 Lecture Midterm	10%
1 Lecture Final Exam	30%
Total	<b>100%</b>

## Evaluation Components

### 5 Lab Assignments

**Value:** 25% of final grade

**Due Dates:** Exact dates will be given during the first lab, estimate dates in schedule.

**Length:** Approximately 20 minutes, each.

**Type:** Variable format. Details provide one week prior to each quiz.

**Description:** There will be 2 quizzes, 1 Spot Test, 1 Practical Quiz/Test, 1 Written Research Paper, each worth 5%. Quizzes and spot tests will be completed individually within the scheduled lab session time. The Research Paper will be due on the last day of classes.

### Lab Exam

**Value:** 25% of final grade

**Due Date:** See Course Schedule at the end of this syllabus.

**Type:** Variable format: short and long answer, multiple choice.

**Description:** This face to face exam is a cumulative lab examination designed to assess student's knowledge throughout the entire lab. Mix of styles: quiz, spot test and project/practical. Approximately 90 minutes in length. More details will be given during the lab sessions.

## 2 Lecture Quizzes

**Value:** 10% of final grade

**Date:** See Course Schedule at the end of this syllabus.

**Length:** 20 minutes, each

**Type:** Multiple choice.

**Description:** These quizzes are designed to assess a student's knowledge and understanding of the material from the previous lecture topics and prepare the student for the Lecture Midterm and Lecture Final Exams. Each quiz consists of approximately 15 multiple-choice questions delivered and submitted online through Canvas. Each quiz will be taken individually during the noon hour of a lecture day.

## Lecture Midterm Exam

**Value:** 10% of final grade

**Due Date:** See Course Schedule at the end of this syllabus.

**Type:** Multiple choice.

**Description:** This face to face exam will be completed during 50 minutes of lecture time. The examination is taken individually and is designed to assess students' knowledge and understanding of the core concepts of the lecture. The examination will consist of 30 to 50 multiple choice questions covering the lecture and lab content.

## Lecture Final Exam

**Value:** 30% of final grade

**Due Date:** Scheduled during the Final Exam period, Dec. 8 - 23, 2021.

**Type:** Multiple choice.

**Description:** This face to face exam is a cumulative examination designed to assess student's knowledge and understanding of the core concepts covered throughout the entire course. The final exam will consist of 80 to 100 multiple choice questions, covering all lecture and lab content. The duration of the exam is 3 hours.

## Important Academic Dates

Thurs. Sept. 16th – Last day to withdraw from T1 (Fall) classes with 100% tuition credit.

Thurs. Sept. 23th – Last day to withdraw from T1 (Fall) classes with 75% tuition credit.

Thurs. Sept. 30th – Last day to withdraw from T1 (Fall) classes with 50% tuition credit.

Mon. Dec. 6th – Last day to withdraw from T1 (Fall) classes.

## Laboratories

Labs begin September 14<sup>th</sup>, 2021. PAWS registration will list a time and day of the week for each lab section and the general lab schedule is provided on the final page of this syllabus. St. Peter's College staff and instructors will strive to deliver the best possible learning experience, as such there will face to face delivery attempted for all labs. This

face to face delivery will have to meet with COVID-19 safety standards set out by the University and the Health Authority, and be subject to change on short notice. However, the content for each lab will be made available on Canvas to ensure all students have access to materials, no matter the circumstances. More information about labs will be given during the first lecture.

The 2021-22 edition of the Lab Manual for Biology 120.3 is required for all labs. A device capable of capturing digital photographs (ex. smartphone camera, webcam, digital camera) will also be required. Students are expected to participate in and complete all lab activities and assignments. Consult the 2021-22 Lab Manual, or your Lab Instructor, for the procedure to follow if absent from a lab or a lab assignment. Contact with your instructor must be made within THREE WORKING DAYS of the missed lab or lab assignment.

### **Criteria That Must Be Met to Pass, including Attendance, Assignment Submissions, & Grading**

It is to the student's benefit to be on time and attend all lectures. It is essential students attend the section number in which they are enrolled, as content can vary from section to section.

Students are encouraged to review all University examination policies and procedures: <http://policies.usask.ca/policies/academic-affairs/academic-courses.php>.

All assignments and exams are to be completed during the assigned time (see Evaluation Components section above). Any incomplete quizzes, assignments and exams will be assigned a mark of zero. At the end of Term 1, all grades from all assignments and exams will be tallied. A total grade of 50% is required to pass this course. However, students not attending the Lecture Final Exam will be assigned an INF and a grade of 49% or lower (depending on work completed). In short, students must attend the Lecture Final Exam. University regulations concerning grading and examinations are at <https://students.usask.ca/academics/exams.php>

Accommodations will not be made for students making travel or employment arrangements during the Lecture Midterm, the Lecture Final, or the Lab Exam times. If a student is absent from the Lecture Midterm Exam, the Lecture Final Exam, or the Lab Exam for a legitimate reason, the student may apply for consideration of a Deferred Exam, see below.

**Lecture Midterm and Lab Exam Deferrals:** In the event that a student has a legitimate U of S timetabling conflict, contact the instructor right away in order to make possible arrangements for an alternate date to write a Deferred Midterm Exam or a Deferred Lab Exam. If a student is absent from the Midterm or Lab Exam due to a medical emergency or another exceptional circumstance, the student must advise the instructor within THREE WORKING DAYS of the missed exam providing explanatory documentation. This begins a discussion about qualification for a Deferred Exam, this does not guarantee a Deferred Exam will be awarded. If a student does not advise the instructor within three working days, or does not have an acceptable excuse, a grade of zero will be assigned for the exam.

Lecture Final Exam Deferrals: Application for Lecture Final Exam Deferrals are made to the Dean's Office of the College in which the student is registered, and must be initiated within THREE WORKING DAYS of the missed exam. Awarded Deferred Exams are then set at a much later date, by the University of Saskatchewan. The course instructor cannot award a Deferred Lecture Final Exam or set the deferral date.

### **Student Feedback**

The instructor will return all lab quizzes & assignments to the student within 7 days of the assignment date. Lab Exams, Lecture Midterm Exams and Lecture Final Exams will be marked within two weeks and grades will be posted on Canvas. Students must make arrangements with the instructor to see these exams.

### **Use of Video, Recording the Course, and Copyright**

At times in this course students will be required to have video on during video conferencing sessions. It will be necessary for students to use of a webcam built into or connected to a computer. Video conference sessions in this course, including student participation, will be recorded and made available only to participants in the course section for viewing via Canvas after each session. This is done, in part, to ensure that students unable to join the session (due to, for example, issues with their internet connection) can view the session at a later time. This will also provide students the opportunity to review any material discussed.

Please remember that course recordings belong to the instructor, the University, and/or others (like a guest lecturer) depending on the circumstance of each session and are protected by copyright. Do not download, copy, or share recordings without the explicit permission of the instructor (see <http://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>). More information on class recordings can be found in the Academic Courses Policy <https://policies.usask.ca/policies/academic-affairs/academic-courses.php#5ClassRecordings>. For more information about copyright, please visit <https://library.usask.ca/copyright/index.php> where there is information for students available at <https://library.usask.ca/copyright/students/rights.php>, or contact the University's Copyright Coordinator at [copyright.coordinator@usask.ca](mailto:copyright.coordinator@usask.ca) or 306-966-8817.

### **Students Writing Exams 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 general information, check [www.students.usask.ca/aes](http://www.students.usask.ca/aes), or contact AES at 966-7273 or [aes@usask.ca](mailto:aes@usask.ca). Please see additional information on AES COVID-19 response: <https://students.usask.ca/documents/AES/aes-covid-19-response.pdf>. Students should also contact Student Services for more details.

Students registered with AES may request alternative arrangements 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.

### **Integrity Defined (from the Office of the University Secretary)**

Although the face of teaching and learning has changed due to COVID-19, the rules and principles governing academic integrity remain the same. If students ever have questions about what may or may not be permitted, ask the instructor. Students have found it especially important to clarify rules related to exams administered remotely and to follow these carefully and completely.

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 (<https://governance.usask.ca/student-conduct-appeals/academic-misconduct.php>) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (<https://governance.usask.ca/student-conduct-appeals/academic-misconduct.php#IXXIIAPPEALS>)

For more information on what academic integrity means for students see the Academic Integrity section of the University Library Website at: <https://library.usask.ca/academic-integrity#AboutAcademicIntegrity>

Students are encouraged to complete the Academic Integrity Tutorial to understand the fundamental values of academic integrity and how to be a responsible scholar and member of the USask community - <https://library.usask.ca/academic-integrity.php#Academicintegritytutorial>

## Lecture and Lab Schedule

(Approximate number of 50-minute lectures indicated in brackets)

WEEK	LECTURE TOPIC	LAB TOPIC	EVALUATION
1 (Sept. 2-3)	NO LIVE LECTURE but <u>Canvas Lecture</u> : Purple Pages	NO LAB	
2 (Sept. 6-10)	Introduction (1) What is Biology & Life (1), Life Origins (1)	NO LAB, but ... Week 3A & 3B - Microscopy & Cell Biology (3)	
3 (Sept. 13-17)	Cell Biology (3)	LAB 1 - Introduction, Microscopy, and Cells	
4 (Sept. 20-24)	Cell Membranes & Functions (3)	LAB 2 - Eukaryotic Cell Structure and Function	<i>Lab Assignment 1**</i>
5 (Sept. 27 - Oct. 1)	Cell Cycle (1), Mitosis (1), Related topics (1)	LAB 3 - Osmosis and Cell Division	Lecture Quiz 1, on Weeks 1-4 material
6 (Oct. 4-8)	Cell Cycle & Meiosis (1), Ploidy & Chromosomal Genetics (1)	LAB 4 - Sexual Life Cycles and Meiosis	<i>Lab Assignment 2**</i>
7 (Oct. 11-15)	9am: Midterm 1 10:00am: Mendelian Genetics (2)	NO LAB, but ... Week 7 - Human Genetics (1)	Lecture Midterm, covering Weeks 1-6
8 (Oct. 18-22)	DNA structure (1) & Replication (2)	LAB 5 - Intro to Genetics	
9 (Oct. 25-29)	Gene expression – Transcription (3)	LAB 6 - Human Genetics and Gene Linkage	<i>Lab Assignment 3**</i>
10 (Nov. 1-5)	Gene expression – Translation (3)	NO LAB	Lecture Quiz 2, on Weeks 7-10 material
11 (Nov. 8-12)	<b>Midterm Break</b>		
12 (Nov. 15-19)	Energy (1), Metabolism (1), Enzymes (1)	LAB 7 - Biotechnology: Techniques and Applications	<i>Lab Assignment 4**</i>
13 (Nov. 22-26)	Cellular Respiration (3)	Lab Review	
14 (Nov. 29-Dec. 3)	Photosynthesis (3)	Lab Exam	<i>Lab Exam, covering all labs</i>
15 (Dec. 6)	Last day of classes		<i>Lab Research Assignment Due</i>
Dec. 8 to 23	Final Exam Period		Lecture Final Exam, comprehensive

\*\*NOTE: Lab Assignments 1-4 dates are subject to change, exact dates given in first lab