UNIVERSITY OF SASKATCHEWAN and **Cumberland College**

# COURSE SYLLABUS

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| **COURSE TITLE:** | Biology 121 The Diversity of Life | | |
| **COURSE CODE:** | 22461 | **TERM:** | 2 |
| **COURSE CREDITS:** | 3 | **DELIVERY:** | Lecture & Practicum (Lab) |
| **CLASS SECTION:** | C10 | | |
| **CLASS START DATE:** | Jan. 5th, 2022 | **LAB START DATE:** | Jan. 19th, 2022 |
| **CLASS LOCATION:** | Melfort Campus | **LAB LOCATION:** | Melfort Campus |
| **CLASS TIME:** | Wed. 12:30 p.m. | **LAB TIME:** | Wed. 4 p.m. |
| **WEBSITE:** | www.usask.ca and www.bblearn.usask.ca | | |

## Treaty and Land Acknowledgement

As we engage in learning, we would like to acknowledge that the Melfort campus of Cumberland 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

### 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. Zoom meetings can also be set up, if more in-depth explanations are required.

## Remote Learning Context

This course (lecture and lab) will be delivered face-to-face. However, 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

Our world has at least 15 million species, all of which have adapted to particular environments and lifestyles and use energy to grow and reproduce. This course is designed to introduce you to the vast and exciting field of biology, with a focus on biological diversity, evolution, adaptations of organisms to specific environments, and the evolutionary, ecological and anthropogenic factors influencing changes in biodiversity. We examine these processes in representative organisms from all the major groups, and discuss factors influencing changes in biodiversity over time and space. Prerequisites: Biology 30 or BIOL 90 or BIOL 107 or BIOL 108. Note: Students with credit for BIOL 110 will not receive credit for BIOL 121.

## 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. The lecture & labs will be delivered face-to-face, at Cumberland College, Melfort Saskatchewan. For a detailed outline, please pay attention to the schedule at the end of this document. 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.

## Learning Outcomes

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

- have an understanding of biological principles (concepts), and that evolution is the unifying principle in biology
- gain an appreciation for biology as an experimental science [hence, provide necessary background for advanced study of biology and other related disciplines], an realize that an understanding of biological principles requires knowledge of other fields of science (chemistry, physics, geology, geography, mathematics, biochemistry) and many disciplines within biology (e.g. evolution, ecology, genetics, physiology, structure and function, ethology, parasitology, molecular biology, etc.).
- obtain knowledge of the diversity and complexity of life, which includes how organisms are adapted to their environment and the variation (e.g. morphological, genetic, physiological, behavioural) that exists among individuals of the same species and between individuals of related species
- be able to think critically regarding scientific issues in our society and understand the importance of relationships between organisms and their environment, and how biodiversity is constantly changing over time

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/vptl/LearningCharter.pdf

## Required Resources

### Readings/Textbooks

*2021-2022 Lab Manual for Biology 121.3*. 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.

There is **no required textbook** for this class, see downloadable note section below. However: *BIOLOGY: Exploring the Diversity of Life: 4th Can. Ed., by Russell*, Nelson Pub. (either printed copy or e-text) is recommended. Textbook readings from the 4th Edition are available below. **Please note**: Older editions are still usable.

Items can be purchased online from the University of Saskatchewan Bookstore: https://bookstore.usask.ca/students.php#MyTextbooks

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| Week 1 | Purple Pages & Design an Experiment Chapter 21 |
| Week 2 | Appendix B & Chapter 18 |
| Week 3 | Appendix B & Chapter 19 |
| Week 4 | Chapter 16 & 21 |
| Week 5 | Chapter 17 |
| Week 6 | Chapter 18 & 28 |
| Week 7 | Chapter 31 |
| Week 8 | Purple Pages & Chapters 21 to 24 |
| Week 9 | Chapters 20, 24 to 27 |
| Week 10 | Chapters 29 to 32 |
| Week 11 | Chapters 29 to 32 |
| Week 12 | Chapter 28 |

*Downloadable note packages, for Section C10 students*. **Required**. The instructor for this section of Biology 121.3 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.

*BBC Planet Earth and Blue Planet video series*. **Highly recommended**. Instructor has copies to loan, if you cannot find copies on video streaming services.

### 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 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 Bio121 Section C10.

There are several online resources to help support student learning in Biol121. 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

NOTE: All evaluations will be attempted face-to-face. However, with the rapidly changing pandemic, these may move to online/remote delivery. If you have questions or concerns about course delivery, contact the instructor or Student Services.

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| BBC Planet Earth Assignment | **Included in Lecture Quizzes and Final |
| Lecture Quizzes (4 x 5% each) | **20% |
| Lecture Final | **30% |
| Video assignment | 10% |
| Lab Assignments | 20% |
| Lab Exam | 20% |
| **Total** | **100%** |

## Evaluation Components

### BBC Planet Earth Assignment

**Value**: 0%
**Date**: Begins January 5th, 2022, runs all term.
**Format:** Streamed video or DVD
**Length:** ~50 minutes, each
**Description:** Download a note/question pack from Canvas and watch a specified BBC Planet Earth video each week. Cross reference with class notes and other resources. **Approximately 1 question per Lecture Quiz and 10 questions on the Lecture Final.

## Lecture Quizzes

**Value**: 20% of final grade (4 quizzes x 5% per quiz)
**Date**: See Course Schedule at the end of this syllabus.
**Format:** 10 multiple choice questions, closed book
**Length:** 15 minutes, each
**Description**: Each quiz will be during the first 15 minutes of a lecture period, and covers previous week(s) lecture.

## Lecture Final

**Value**: 30% of final grade
**Date**: See Course Schedule at the end of this syllabus.
**Format:** 70 multiple choice questions, closed book
**Length:** 1.5 hours
**Description**: Comprehensive lecture exam, covering all material in the course. Delivered and submitted online through Canvas. The Final will be held during the April Final Exam period (date yet to be determined).

Consult the April Final Exam Schedule when it is released for the examination date and time. The Final Exam will be scheduled by Distance Education Unit at the UofS. Your instructor does not set the date/time on the Lecture Final Exam. The Final Exam period runs April 7 to 28, 2022

Accommodations will not be made for students making travel arrangements during this time frame. If a student is absent from the Final Lecture 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.

## Video assignment:

**Value**: 10% of final course grade
**Date:** Before midnight Last Day of Classes as shown in the Class Schedule.
**Format:** The video assignment will be conducted on the last learning topic of "*Human threats to Biodiversity*". Students will be tasked to select a specific case study for one threat of their choice and design a short 3-minute video in a news-style report
**Description**: The video may take any creative delivery format – mock interview, news report, dramatization, presentation for an NGO or government body, etc. Emphasis will be on content, demonstrated understanding of the topic, and confidence in oral delivery mode rather than production quality (smartphone video and free editing software is fine). It is recommended that you develop a storyboard and script before recording your video and be sure to credit any image, text, video or sound sources as per copyright guidelines. A grading rubric will be provided. All student submissions must be uploaded in CANVAS.

### Lab Assignments

**Value**: 20% of final grade
**Due Date**: Lab Schedule will be given during the first lab and posted on Canvas.
**Format**: Quizzes (written); spot tests; flower project, other in-lab assignments (possibly worksheets or RO sheets)
**Length:** Variable.
**Description**: The quizzes will be 15-20 minutes in duration and test material from the previous two or three lab exercises. The questions will generally require a short-written answer. Spot tests involve images shown in PowerPoint and short questions about the specimen shown. Closed book, no phones, laptops, tablets or other material allowed. Additional information about the lab quizzes can be found in your lab manual and will be given in the weeks prior to the assignment. Additional information can be found in your lab manual and will be given in the weeks prior to the assignment.

### Lab Exam

**Value**: 20% of final grade
**Due Date**: See Course Schedule at the end of this syllabus.
**Format**: This will be a mixture of spot test, short written answers and practical questions (slide prep, etc.).
**Length:** 1.5 hours.
**Description**: The closed book exam is comprehensive, covering all laboratory sessions. Calculators and all other electronic devices are not allowed.

In the event that a student has a legitimate U of S timetabling conflict, contact the instructor right away in order to make arrangements for an alternate date to write a Deferred Lab Exam. If a student is absent from the 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 Lab Exam, this does not guarantee a Deferred Lab 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 Lab Exam.

## Important Academic Dates

Mon. Jan. 18th – Last day to withdraw from T2 (Winter) classes with 100% tuition credit.

Mon. Jan. 24th – Last day to withdraw from T2 (Winter) classes with 75% tuition credit.

Mon. Jan. 31st – Last day to withdraw from T2 (Winter) classes with 50% tuition credit.

Wed. Apr. 5th – Last day to withdraw from T2 (Winter) classes.

## Laboratories

Labs begin January 19th, 2022 and the general lab schedule is provided on the final page of this syllabus. A more thorough Lab Schedule will be provided during your first lab week. Labs will be designed for face-to-face delivery. If online content is required, a week's notice must be given. This delivery will have to meet with COVID-19 safety standards set out by the University and the Heath Authority.

The 2021-22 edition of the Lab Manual for Biology 121.3 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.

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

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 2, 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 Final Lecture Exam or the Lab Exam will be assigned an INF and a grade of 49% or lower (depending on work completed). In short, students must attend the Final Lecture Exam and the Lab Exam. University regulations concerning grading and examinations are at https://students.usask.ca/academics/exams.php

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.

## Student Feedback

The instructor will return all lab quizzes & assignments to the student within 7 days of the assignment date. Lecture Quizzes 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 Lecture Quizzes and Lecture Final Exams.

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

At times in this course students may 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 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, or contact AES at 966-7273 or 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://secretariat.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://secretariat.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

## Course Schedule

(Approximate number of 50 minute lectures in brackets)

| WEEK | Lecture | Lab |
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| **1 (Jan. 5)** | Intro (1); Intro to life, water & energy (1); Biology as a Science (1) | NO LAB<br>**BBC Planet Earth Assignment begins** |
| **2 (Jan. 12)** | Intro to Biodiversity & Species Concepts (3) | NO LAB |
| **3 (Jan. 19)** | Classification, Systematics/Cladistics & Lab ROs (3) | LAB 1<br>Introduction, Prokaryotes |
| **4 (Jan. 26)** | Evolution – History of thought & evidence (3) | LAB 2<br>Protists<br>**Lecture Quiz 1 (W1-3)** |
| **5 (Feb. 2)** | Evolution – Microevolution & Hardy-Weinberg (3) | LAB 3<br>Fungi |
| **6 (Feb. 9)** | Evolution – Macroevolution & Extinctions (3) | LAB 4<br>Plants I - Green algae, Mosses, Ferns & Club Mosses<br>**Lecture Quiz 2 (W4-5)** |
| **7 (Feb. 16)** | Factors affecting life, ecozones & regional diversity (3) | LAB 5<br>Plants II – Conifers & Angiosperms |
| **8 (Feb. 21-25)** | **Midterm Break** | |
| **9 (Mar. 2)** | Changes through time – Geological time scale, origins of life to multicellular sexual organisms (3) | LAB 6<br>Animals I - Sponges, Cnidarians, Flatworms & Nematodes |
| **10 (Mar. 9)** | Changes though time (3) – changes to multicellular life | LAB 7<br>Animals II – Annelids, Molluscs & Arthropods<br>**Lecture Quiz 3 (W6-9)** |
| **11 (Mar. 16)** | Biotic Interactions – behaviors, growth, competition & exploitation (3) | LAB 8<br>Animals III - Echinoderms & Chordates |
| **12 (Mar. 23)** | Biotic Interactions – mutualism, succession & island biogeography (3) | Review Lab<br>**Lecture Quiz 4 (W9-11)** |
| **13 (Mar. 30)** | Humans & Biodiversity – exploitation, introduced species, pollution, conservation (3). | ***Lab Exam – Labs 1-8***<br>**BBC Planet Earth Assignment, finishes** |
| **14 (Apr. 5)** | | **Video Assignment due before midnight** |