

 Department of Biology

 **COURSE SYLLABUS**

COURSE TITLE: BIOL 120.3.01 - The Nature of Life

COURSE CODE: 22170 TERM: Winter 2020

COURSE CREDITS: 3.0 DELIVERY: Lecture & Practicum (Lab)

CLASS SECTION: 01 START DATE: Tuesday January 7th

CLASS LOCATION: HLTH 1150

LAB LOCATION: Biology Building, Rm 202 or Rm 218

WEBSITE: Via Blackboard

CLASS TIME: 10.00 to 11.20 am (T/R)

LAB TIME: 8.30 to 11.20 am (R)

or 1.30 to 4.20 pm (M,T,W,R,F)

or 5.30 to 8.20 pm (M,T,W)

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.

**ANTICIPATED 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 should know how to use a microscope to visualize cells and tissues and how to solve basic genetics problems. Detailed learning objectives for each lecture topic will be posted in Blackboard Learn.

**INSTRUCTOR CONTACT INFORMATION**

Lecturers:

Dr. Jorge Chedrese Rm 310.1 Collaborative Science Research Building (CSRB) Section Coordinator (306) 966-4446 jorge.chedrese@usask.ca

Dr. Doug Smith Biology RM 118 Biology

 966-4415 dh.smith@usask.ca

Mr. Paul Dick, M.Sc. Rm 216 Biology Building

Lab Coordinator (306) 966-4423 paul.dick@usask.ca

Mr. James Bush, M.Sc. Rm 118 Biology Building

Coordinator for Mindtap james.bush@usask.ca

and SARA

**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 soft cover copy version, which mostly contains the chapters utilized in BIOL 120.3. 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 lecture 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 a number of 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 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 Midterm Lecture and Final Lecture 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 utilize any type of electronic device during an exam (e.g., cell phone, dictionary, translator, head-phones, etc.) (see Academic Honesty section below).

**Midterm Lecture Exam** to be held outside of class time on the evening of **Wednesday, February 12th, 2020 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 arrangement for an alternate date for you to write a Deferred Midterm Lecture Exam. If you are absent from the **February 12th** 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 Midterm Lecture Exam.

The **Final Lecture Exam** will be scheduled by the Registrar’s Office to take place within the exam period of **April 9th – 29th, 2020**. The final exam schedule for Term 2 typically becomes available by late February. 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 written during the **week of February 3rd.** Lab Exam 2 will be written during the
**week of March 30th**. Consult the 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 week of labs.

**GRADES**

The final course grade is calculated as follows:

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

**IMPORTANT ACADEMIC DATES**

Friday Jan. 17th – Last day to withdraw from Term 1 (Fall) classes with 100% tuition credit.

Friday Jan. 24th – Last day to withdraw from Term 1 (Fall) classes with 75% tuition credit.

Friday Jan. 31st – Last day to withdraw from Term 1 (Fall) classes with 50% tuition credit.

Saturday Feb. 15th – Last day to withdraw from Term 1 (Fall) classes.

**Lectures for Section 01 (T/Th 10:00am - Rm 1150 HLTH) and Lab Schedule for BIOL 120.3 - January - April, 2020.**

 **Lecture Topic Lab Number and Topic**

**Week 1** **NO LAB**

Jan. 7 & 9 Introduction; Cell Biology

 Chedrese

**Week 2** 1. Introduction, Microscopy and Cells

Jan. 14 & 16Cell Biology

 Chedrese

**Week 3** 2. Eukaryotic Cell Structure and Function

Jan. 21 & 23 Cell Biology; Cell Cycle

 Chedrese

**Week 4** 3. Osmosis and Cell Division

Jan. 28 & 30 Cell Cycle; Meiosis

 Chedrese

**Week 5** **Lab Exam 1**

Feb. 4 & 6 Origin of Life; Energy

 Chedrese

**Week 6** **NO LAB**

Feb. 11 Thermodynamics

Chedrese

Feb. 12 **Midterm Lecture Exam –Held from 5:30-6:30pm, outside of class time**.

 Location will be announced.

Feb. 13 Enzymes

 Chedrese

**Week 7** **Winter mid-term break NO LAB**

**Week 8** 4. Sexual Life Cycles and Meiosis

Feb.25 Membrane Structure and Function

Chedrese

Feb. 27Mendelian Genetics

 Smith

**Week 9**  5. Introduction to Genetics

Mar. 3 & 5Chromosomal Genetics

 Human Genetics,

Smith

**Week 10** 6. Human Genetics and Gene Linkage

Mar. 10 &12 DNA Structure and Replication

Gene Expression

 Smith

**Week 11** 7. Biotechnology: Techniques

Mar. 17 & 19 Cellular Respiration and Applications

 Smith

**Week 12** Review Lab

Mar. 24 & 26 Photosynthesis

 Smith

**Week 13** **Lab Exam 2**

Mar. 31 & Apr. 2 Metabolism

 Smith

**Week 14** **NO LAB**

Apr. 7 Completion of Metabolism

 ReviewSmith - Chedrese

FINAL LECTURE EXAM SCHEDULE: April 9 -29, 2020.

Date and location of the BIOL 120.3 Final Lecture Exam will be announced by the Registrar’s Office.

**LABORATORIES**

Labs begin in the week of January 13th, 2020. 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 2019-20 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.

**STUDENTS WRITING 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 policies and procedures. For more information, check [www.students.usask.ca/aes](http://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.

**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> 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#IIDEFINITIONS> 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://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php#IXXIIAPPEALS>

**Chapters and sections in the 4th Cdn. Ed. - 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 Other Non-Mendelian Inheritance Mechanisms

 – §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. Ed**., which was used in BIOL 120 for the past few years. Although the textbook publisher has made some changes to the new 4th Ed., here are the relevant parts of that textbook which were utilized in BIOL 120 in the past. Please note that you should investigate the content of the 4th Ed., such as a copy obtainable for short-term loan from the Reserve Desk of the Science Library.

**Chapters and sections in the 3rd Cdn. Ed. - 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

Please note that the above sections from the textbooks 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.

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*.* Date and location of the BIOL 120.3 Final Lecture Exam will be announced by the Registrar’s Office.