COURSE SYLLABUS

COURSE TITLE: BIOL 120 The Nature of Life

COURSE CODE: 40480 TERM: Spring and Summer 2019

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

CLASS SECTION: 01 START DATE: May 8, 2019

CLASS LOCATION: Biol 106 LAB LOCATION: Room 202/Biology Building

CLASSTIME: 8.30 to 10.50 am (M-F) LAB TIME: 1:30-4:20pm

WEBSITE: via Blackboard

**Course Description**

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, Biology 120.3 is one of two foundation courses for biology majors and for students going into Natural Sciences (Program C). Biology 120.3 also counts towards the biology requirements of a number of programs in different colleges across campus. Biology 121.3 -The Diversity of Life -is the sister course to Biology 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**

Dr. Doug Smith Biology RM 118 Biology 966-4415 [dh.smith@usask.ca](file:///C:\Users\jdr661\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\MEK0QU38\dh.smith@usask.ca)

Office Hours: by appointment or immediately after lecture

Lab Coordinator - Paul Dick Biology Building RM 216 966-4423 <paul.dick@usask.ca>

**INSTRUCTIONAL RESOURCES: TEXTBOOK AND LAB MANUAL**

The required textbook for Biology 120.3 is Biology –Exploring The Diversity of Life (4th Canadian Edition) by Russell et al., Nelson Education Ltd., 2019.

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 we will be covering is outlined on the second last page of this outline and will be the core testable material for the course.

Copies of the textbook will be available from the reserve desk in the Science Library, for short term, in library use. The lectures are intended to highlight and reinforce key concepts. Please see the Learning Objectives Summary, which will be posted on Blackboard along with this outline for a more detailed description of the topics you will be responsible for on the midterm and final exam.

The Lab Manual for Biology 120.3(2018-19 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**

Partial class notes will be posted throughout the course on Blackboard. You should download the new notes once they are posted and then bring them to lecture.

Students who purchase a copy of the textbook (including the electronic version)

will have access to MindTap. MindTap is an online platform that provides access to a digital copy of the textbook, animations, and self-tests.

**STUDENT REVIEW AND COURSE PREPARATION (PURPLE PAGES)**

There is prerequisite material that will not be directly covered 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 in the middle of the book denoted by the purple coloured pages (pgs. F2-F56). 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 some of this information will be needed to understand course content and answer questions on the 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.

It is forbidden for students to utilize any type of electronic device during an exam (e.g., cell phone, dictionary, translator, etc.) (see Academic Honesty section below).

There will be one Midterm Lecture Exam in the class time on Thursday May 16th, 2019.

In the event that you miss this exam due to a medical emergency, death in the family, or another exceptional circumstance, you must advise your instructor within

**TWO WORKING DAYS** of the missed exam. If you do not advise your instructor

within these two working days, or do not have an acceptable excuse, a grade of zero will be assigned.

The Final Lecture Exam will be held during the period of May 30st and May 31st, 2019, as arranged by the Registrar. The exact date is TBA. Accommodations will not be made for students making travel arrangements during this time frame. If a student is absent for a legitimate reason he/she may apply for a Deferred Final Exam within **THREE WORKING DAYS** of the missed exam. All applications for a deferred final exam are made to the Dean’s Office of the College in which the student is registered.

**Laboratory Examinations**: There will be two Laboratory Exams. Lab Exam 1 will be on May 14th, 2019. Lab Exam 2 will be on May 28th, 2019. Consult the 2018-19 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 the course, and these are outlined in the Lab Manual.

**GRADES**

The final 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%

Final lecture exam is comprehensive, covering all of the lecture material in the course.

**LABORATORIES**

Labs begin on Thursday May 9th, 2019 in Rms. 202 and 204 Biology. Your lab room assignments will be posted on the bulletin board outside room 202 Biology. Students are expected to attend, and be prepared for, all scheduled labs, reviews, and final lab exams. A general lab schedule is provided at the end of this hand-out.

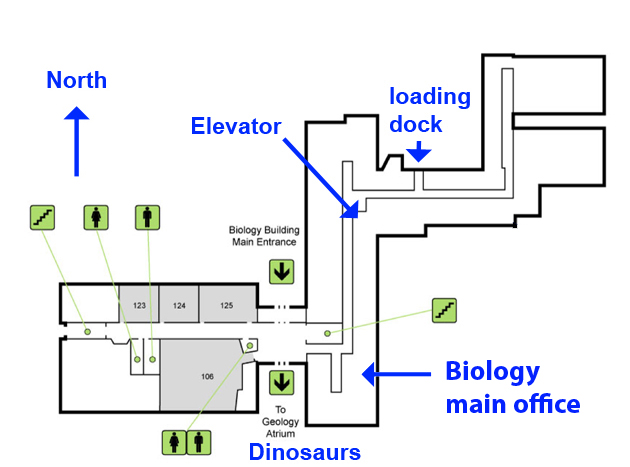
The 2018-2019 edition of the Lab Manual for Biology 120.3 is required for all labs.

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 laboratory instructional staff in Rm. 216 of the Biology Building.

**STUDENTS WRITING EXAMINATIONS** **WITH ACCESS AND EQUITY SERVICES**

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 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 stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by AES.



Students requiring an elevator for access to the second floor in the Biology Building (teaching labs and some faculty offices) may use the elevator in the Museum of Natural Sciences. Alternatively, or if offices on the 3rd floor of the Biology Building need to be accessed, there is an elevator located at the north end of the research wing, opposite Room 130.

**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

[http://www.usask.ca/secretariat/student-conduct appeals/StudentAcademicMisconduct.pdf](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/university_secretary/honesty/StudentNonAcademicMisconduct2012.pdf>)

For more information on what academic integrity means for students see the Student

Conduct & Appeals section of the University

<http://www.usask.ca/secretariat/student-conduct-appeals/academic-misconduct.php>

**Chapters and sections in Russell et al: Biology, exploring the diversity of life**

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

Chapter 2 – The Cell: an Overview – §2–2.4c

Chapter 8 – Cell cycles – §7–7.4b

Chapter 9 – Genetic recombination – §8.3 a-d -Meiosis

Chapter 3 – Defining Life and its Origins – §21–21.5d

Chapter 4 – Energy and Enzymes – §3–3.5b

Chapter 5 – Cell Membranes and Membrane Transport –§4–4.6b

Chapter 10 – Mendel, Genes, & Inheritance – §9–9.2f

Chapter 11 – Genes, Chromosomes, & Human Genetics – §10–10.4d, 8.3c-8.3d

Chapter 12 – DNA Structure, Replication,& Organization – §11–11.3h

Chapter 13 – Gene structure & expression – §12–12.5

Chapter 6 – Cellular respiration – §5–5.7d

Chapter 7 – Photosynthesis – §6–6.4c

**LECTURE AND LAB SCHEDULE FOR BIOLOGY 120.3 (Spring 2019)**

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| **TERM** | **LECTURE TOPIC** | **LAB TOPIC (see lab manual for details)** |
| Day 1 (May 8) | Introduction and Cell Biology | NO LAB |
| Day 2 (May 9) | Cell Biology | LAB 1 – Introduction, Microscopy, and Cells |
| Day 3 (May 10) | Cell Biology and Cell cycle | LAB 2 – Eukaryotic Cell Structure and Function |
| Day 4 (May 13) | Cell Division and Origin of Life | LAB 3 – Osmosis and Cell Division |
| Day 5 (May 14) | Origin of Life, Energy and Enzymes | **Lab Final 1** |
| Day 6 (May 15) | Energy and Enzymes, Membrane Structure | NO LAB |
| Day 7 (May 16) | **Midterm Exam,** Membranes and Transport | LAB 4 – Sexual Life Cycles and Meiosis |
| Day 8 (May 17) | Inheritance | NO LAB |
| Victoria Day (May 20) | **Statutory Holiday** | NO LAB |
| Day 9 (May 21) | Inheritance | Lab 5 Introduction to Genetics |
| Day 10 (May 22) | Inheritance and Molecular Genetics | LAB 6 – Human Genetics and Gene Linkage |
| Day 11 (May 23) | Molecular Genetics | NO LAB |
| Day 12 (May 24) | Molecular Genetics and Respiration | Lab 7 – Biotechnology:  Techniques and Applications |
| Day 13 (May 27) | Respiration | Lab Review |
| Day 14 (May 28) | Respiration and Photosynthesis | **Lab Final 2** |
| Day 15 (May 29) | Photosynthesis and Review | NO LAB |