

Department of Biology

COURSE SYLLABUS

COURSE TITLE: **BIOL 120.3 - The Nature of Life**

COURSE CODE: 22170 TERM: Winter 2019

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

CLASS SECTION: 01 START DATE: Thursday, January 3, 2019

CLASS LOCATION: Health Sciences Building, Rm 1150

LAB LOCATION: Biology Building, Rm 202 or Rm 204

CLASS TIME: 10:00 to 11.20 am (T/Th) LAB TIME: 8.30 to 11.20 am (Th)

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

WEBSITE: via Blackboard 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. Art Davis Rm 320.6, Collaborative Science Research Building (CSRB), (Section 01 Coordinator) Phone: (306) 966-4484 Email: [art.davis@usask.ca](mailto:art.davis@usask.ca)

Office Hours: After each lecture; and Mondays 10:30-11:30am.

Dr. Amr El-Zawily Office: TBD Phone: TBD Email: [amr.elzawily@usask.ca](mailto:amr.elzawily@usask.ca)

Lab Coordinators:

Dr. Amr El-Zawily Rm 216, Biology Building

(Jan. – Feb. 7, 2019) Phone: (306) 966-4423 Email: [amr.elzawily@usask.ca](mailto:amr.elzawily@usask.ca)

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

(Feb. 7 - April, 2019) Phone: (306) 966-4423 Email: [paul.dick@usask.ca](mailto:paul.dick@usask.ca)

Mindtap and SARA:

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

**INSTRUCTIONAL RESOURCES: TEXTBOOK AND LAB MANUAL**

The required textbook for BIOL 120.3 is *Biology - Exploring the Diversity of Life (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, and this will be made available early in Term 2 by Mr. James Bush.

First of all, there is a smaller, hard-copy version (known as Volume 1) which mostly contains the chapters utilized in BIOL 120.3, alone. Secondly, 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. All regular, on-campus sections of the course will sit common midterm and final exams.

The BIOL 120.3 Lab Manual (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**

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 Mindtap. Mindtap is an online platform that provides access to a digital copy of the textbook, and to other resources like animations and self-tests. Note that Mindtap will *not* be used for any mandatory, online quizzes during 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: Structured Study Sessions are run by experienced students who have already completed BIOL 120.3, and achieved an excellent grade. 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 utilize any type of electronic device during an exam (e.g., cell phone, dictionary, translator, head-phones, etc.) (see Academic Honesty section below).

**For students of Lecture Sections 01 and 02**, there will be one **Lecture Midterm Exam** to be held outside of class time on the evening of **Thursday, February 7th 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 Lecture Midterm Exam. If you are absent from the February 7th midterm 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 Lecture Midterm 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 **Lecture Final Exam** will be arranged by the Registrar’s Office to take place within the exam period of **April 8-30, 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 Lecture Final 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 Jan. 28 – Feb. 1, 2019**. Lab Exam 2 will be written during the **week of March 25 – 29, 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 labor-atory component of this course, and these are outlined for you in the 2018-19 version of the Lab Manual.

**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**

Wed. Jan. 16th – Last day to withdraw from Term 2 (Winter) classes with 100% tuition credit.

Wed. Jan. 23rd – Last day to withdraw from Term 2 (Winter) classes with 75% tuition credit.

Wed. Jan. 30th – Last day to withdraw from Term 2 (Winter) classes with 50% tuition credit.

Fri. March 15th – Last day to withdraw from Term 2 (Winter) classes.

**LABORATORIES**

Labs begin in the week of January 7th, 2019. PAWS registration will give you a time and day of the week for your lab section, but room assignments are made by the Lab Coordinator, Dr. Amr El-Zawily. Lab room assignments will be posted on Blackboard Learn immediately before your first scheduled lab (check this list when you arrive for the lab, to determine in which room you have been placed). 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. After February 6, 2019, all inquiries about BIOL 120 labs should be directed to the Laboratory Coordinator, Mr. Paul Dick.

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 (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 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 examin-ations. 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

[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/StudentNon-AcademicMisconduct2012.pdf>).

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: <http://www.usask.ca/university_secretary/pdf/dishonesty_info_sheet.pdf>

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.

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

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

*Midterm Lecture Exam for Lecture Sections 01 and 02 – Thursday, February 7, 2019 from 5:30 – 6:30pm (Room to be announced)*

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

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.

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 you should investigate the content of the 4th Edn., such as a copy obtainable for short-term loan from the Reserve Desk of the Science Library.

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

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

*Midterm Lecture Exam for Lecture Sections 01 and 02 – Thursday, February 7, 2019 from 5:30 – 6:30pm (Room to be announced)*

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.

**Lectures for Section 01 (T/Th 10:00–11:20am at Rm 1150, Health Sciences Building) and Lab Schedule for BIOL 120.3 during January-April, 2019** (*approximate* number of lectures in brackets)

**Lecture Topic Lab Number and Topic**

**Week 1** Introduction; Cell Biology (1) **NO LAB**

Jan 3 Davis

**Week 2** Cell Biology (2) 1. Introduction, Microscopy

Jan 8 & 10Davisand Cells

**Week 3** Cell Biology (1.5); Cell Cycle (0.5) 2. Eukaryotic Cell Structure

Jan 15 & 17 Davis and Function

**Week 4** Cell Cycle (1); Meiosis (1) 3. Osmosis and Cell Division

Jan 22 & 24 Davis

**Week 5** Origin of Life (1); Energy (1) **Lab Exam 1 (Jan 28 – Feb 1)**

Jan 29 & 31 Davis

**Week 6** Enzymes (1); Membrane Structure (1) **NO LAB**

Feb 5 & 7 Davis

**Thursday, Feb 7 Lecture Midterm Exam – *Note:* Held from 5:30-6:30pm, outside of class time**.

Location will be announced.

**Week 7** Feb 12 Membrane Function (1) Davis 4. Sexual Life Cycles and Meiosis

Feb 14 Mendelian Genetics (1)El-Zawily

**Week 8** **Reading Week Break (No Lectures or Labs during February 18 – 23, 2019)**

**Week 9** Genetics (2) El-Zawily 5. Introduction to Genetics

Feb 26 & 28

**Week 10** Human Genetics (1), 6. Human Genetics and Gene Linkage

March 5 & 7DNA Structure and Replication (1) El-Zawily

**Week 11** Gene Expression (2) 7. Biotechnology: Techniques

March 12 & 14 El-Zawily and Applications

**Week 12** Cellular Respiration (2) Review Lab

March 19 & 21 El-Zawily

**Week 13** Photosynthesis (2) **Lab Exam 2 (March 25 – 29)**

March 26 & 28 El-Zawily

**Week 14** Completion of Metabolism (1); Review (1) **NO LAB**

April 2 & 4 El-Zawily Davis and El-Zawily

FINAL LECTURE EXAM SCHEDULE: April 8-30, 2019.

Date and location of the 3-hour BIOL 120.3 Final Lecture Exam will be announced by the Registrar’s Office.