



COURSE OUTLINE

1. **Course:** BIOL 243, DNA, Inheritance and Evolution - Winter 2021

Coordinator(s)

Name	Email	Phone	Office	Hours
Dr Cynthia Yip	cyp@ucalgary.ca	403 220-6129	EEEL 301A	By appointment only

Section(s)

Lecture 01: MWF 11:00 - 11:50 - Online

Instructor	Email	Phone	Office	Hours
Christopher Neufeld	TBA	TBA	TBA	TBA
Dr Gordon Chua	gchua@ucalgary.ca	403 220-7769	BI 560	TBA

Lecture 02: MWF 13:00 - 13:50 - Online

Instructor	Email	Phone	Office	Hours
Christopher Neufeld	TBA	TBA	TBA	TBA
Dr Gordon Chua	gchua@ucalgary.ca	403 220-7769	BI 560	TBA

Dr. Neufeld is the COURSE Coordinator.

Dr. Yip is the LAB Coordinator.

Online Delivery Details:

This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

This course has a registrar scheduled, synchronous final exam. The writing time is 1 hours + 50% buffer time.

Lectures will be primarily be given synchronously via Zoom, and will be recorded. Lecture notes and recordings will be available on D2L. In some cases, lectures may be pre-recorded and posted on D2L; students will be given advanced notice if this should occur.

Three of the four synchronous Lecture Tests will be administered at the start of lectures on February 1, March 1 and March 22. Lecture Tests are closed book (see Examination Policy below) and designed to take 33 minutes to complete, but you will be given an additional 17 minutes to account for any technical issues. The last Lecture Test will occur during the final exam period at the time scheduled by the Office of the Registrar. See details on D2L.

Laboratories will be synchronous and delivered live during the scheduled laboratory time. Lab attendance is mandatory and lab sessions will not be recorded. Teaching assistants will be available in real-time for "office hours" during the scheduled lab time and then by email outside of laboratory time.

Laboratory Assignments will be available on D2L over a designated period of time for students to complete before the deadline for each assignment/exercise. Refer to the Laboratory Schedules posted on D2L.

Online Etiquette: As with in person classes, students are expected to behave in a professional and respectful manner during online teaching and learning sessions, and when using course tools such as discussion boards.

The chat function in an online program such as Zoom is reserved to ask questions in a respectful manner or to respond to questions posed in class. The chat function must not be used for posting disrespectful comments towards other students or the course instructor, nor be used for having side-conversations, including private chats. Please note that if the instructor downloads the chat history for the session, ALL chats (including private chats) will be included in the history. Please be sure to not type anything in the chat that you would not be comfortable with the instructional team seeing.

Course Site:

D2L: BIOL 243 L01-(Winter 2021)-DNA, Inheritance and Evolution

Note: Students must use their U of C account for all course correspondence.

2. Requisites:

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Biology 241.

Antirequisite(s):

Credit for Biology 243 and 205 will not be allowed.

- Students must earn a minimum of C- in Biology 241 to continue on to Biology 243.
- Students are responsible for ensuring that their annual course selections are in accord with all Calendar requirements. Students who do not meet these requirements will be removed from the course.
- Credit for more than two of Biology 231, 233, 241, 243 will not be allowed.
- Completion of two of Biology 231, 233, 241, 243 does not guarantee access to Biological Sciences Degree Programmes.
- This course is NOT recommended for those students seeking a general interest overview of the biological sciences.

3. Grading:

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Lecture Tests (4 x 10%)	40	Feb 1, March 1, March 22 and TBA (4th test is registrar-scheduled)
Take-Home Assignments	30	Dates provided on D2L
Online Quizzes (10 x 0.5%)	5	Each quiz will be available for 5 days; dates provided on D2L
Laboratory Component	25	Dates for lab assignments provided on D2L

Not knowing, or forgetting, the Lecture Test and Quiz dates are not an acceptable reason for requesting a deferred test or quiz. We strongly encourage each student to create, consult, and update a personal calendar that includes all course-related deadlines.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	88 %	84 %	80%	76%	72 %	68 %	64%	60%	55 %	50 %

This course will have a final exam that will be scheduled by the Registrar. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 1 hours.

The final exam will be administered using an on-line platform. Per section [G.5](#) of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to the end of the registrar scheduled synchronous exam to support students. This way, your exam schedule accurately reflects the start time of the exam for any synchronous exams. E.g. If a synchronous exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the end time of the synchronous exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9

am and finish at 12pm. – updated April 6, 2021

A maximum course letter grade of D+ will result if the student does not:

1. Earn >50% on the weighted average of the 4 Lecture Tests
2. Complete all laboratory exercises and earn >50% on the weighted average of all the lab components; lab assignments will not be accepted from unexcused students who did not attend the duration of a lab from the lab in which data were collected/distributed.

This course does not have an out-of-class Midterm Exam. The last Lecture Test (#4) will be administered as a registrar-scheduled Final Exam.

4. Missed Components Of Term Work:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

In the event that a student legitimately fails to submit any LECTURE assessment on time (e.g. due to illness etc...), please contact the Course Coordinator (Dr. Neufeld) to arrange for a re-adjustment of a submission date. Absences not reported to the Course Coordinator within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course at the discretion of the Coordinator.

In the event that a student legitimately fails to submit an online LABORATORY assessment on time or fails to attend a synchronous lab (e.g. due to illness etc...), please contact the Lab Coordinator (Dr. Yip). Missed components or absences not reported to the Lab Coordinator within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course at the discretion of the Lab Coordinator.

Attendance is required at all laboratory classes for the duration of the scheduled lab time, and you may only attend your registered lab section.

Assignments will not be accepted if you have an unexcused absence from the lab in which data are collected.

5. Scheduled Out-of-Class Activities:

There are no scheduled out of class activities for this course.

6. Course Materials:

Required Textbook(s):

Russell et al., *Biology: Exploring the Diversity of Life*, 4th Canadian edition Nelson.

You will also require a SimBio SimUText W2021 subscription, which includes the cost of the lab manual (Yip et al. 2021. BIOL 243 Laboratory Manual, 2021 edition.)

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

Lecture Tests are synchronous tests. The first three lecture tests will be written during synchronous class time on February 1, March 1 and March 22 respectively. These Lecture Tests will be designed to take 33 minutes to write and students will have an additional 17 minutes (for a total exam time of 50 minutes) to account for any technical issues. The last Lecture Test (#4) will be scheduled by the Office of the Registrar during the final exam period. It will be a synchronous online exam and is designed to be completed within 1 hour, with additional buffer time.

For all tests, time will be adjusted for SAS students if needed and accommodations for students with issues (e.g., caregiving responsibilities, ability to secure an appropriate test-taking environment, different time zones) will be considered on a case-by-case basis. Please contact Dr. Neufeld by email at least 14 business days prior to the synchronous assessment to discuss the matter.

The lecture tests are **closed book**. This means that you may not access your lecture notes or any other resources during the lecture tests. No other aids are allowed on tests or examinations, including accessing internet resources such as search engines (Google, etc.), other websites, shared documents (Google docs etc.) or chat servers (Discord, WhatsApp, etc.), etc., and you are specifically prohibited from working with or contacting any other individuals while you complete the exam. Violation of these rules is considered academic misconduct with penalties as described in the University Calendar section K.

There will be no out-of-class Midterm Exam. The last Lecture Test will be administered as a registrar-scheduled Final Exam for this course.

IMPORTANT: It is the student's responsibility to ensure that they have adequate computer and internet access to write the lecture tests. Students will be required to begin their lecture tests promptly at the start of their scheduled class on the day of the test. If a student encounters any technical issues in starting a lecture test, they **MUST** document the issue by taking a photo, screenshot, or video, and they must contact the instructor immediately so that either additional time can be provided to access the exam or alternative arrangements made. Students claiming such difficulties who do not contact their instructor providing evidence of technical difficulties within 15 minutes of the scheduled start of the lecture test will not be allowed to write the test and will receive a grade of zero (0) on the test. If a student's lecture test is suspended during the test (lost internet connection, internet browser crashes etc.), they **MUST** provide evidence as outlined above and contact the instructor immediately. Students will then be granted re-entry to suspended lecture tests if they began the test on time, provided evidence of the suspension, and still have time remaining to complete their test.

Students should also read the Calendar, [Section G](#), on Examinations.

8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

10. Human & Living Organism Studies Statements:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students taking laboratory and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (syva@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
Student Academic Misconduct [Policy](#) and [Procedure](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- e. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email addy@ucalgary.ca or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information,

see [Legal Services](#) website.

- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](#) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](#) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

BIOL 243 - Lecture Schedule Winter 2021 (Tentative, subject to change)

Date Topic

- 1. Jan 11 Theme 1A: Introduction to Molecular Genetics and the Information Molecule DNA GC
- 2. Jan 13 Theme 1A: Introduction to Molecular Genetics and the Information Molecule DNA GC
- 3. Jan 15 Theme 1B: DNA Structure and Genomes GC
- 4. Jan 18 Theme 1B: DNA Structure and Genomes GC
- 5. Jan 20 Theme 1C: DNA Replication and Repair GC
- 6. Jan 22 Theme 1C: DNA Replication and Repair GC
- 7. Jan 25 Theme 2A: Central Dogma of Molecular Biology GC
- 8. Jan 27 Theme 2B: Transcriptional and Posttranscriptional Gene Regulation GC
- 9. Jan 29 Theme 2B: Transcriptional and Posttranscriptional Gene Regulation GC
- 10. Feb 1 Lecture Test #1 (in class, 50 min, 10% of course): Themes 1A – 2A
- 11. Feb 3 Theme 2B: Transcriptional and Posttranscriptional Gene Regulation GC
- 12. Feb 5 Theme 2C: Protein Structure & Translational and Posttranslational Gene Regulation GC
- 13. Feb 8 Theme 2C: Protein Structure & Translational and Posttranslational Gene Regulation GC
- 14. Feb 10 Theme 2C: Protein Structure & Translational and Posttranslational Gene Regulation GC
- 15. Feb. 12 Theme 2D Mutations and Cell Division (Inheritance) GC
- Feb 15-19 Winter Break – no classes
- 16. Feb 22 Theme 2D Mutations and Cell Division (Inheritance) GC
- 17. Feb 24 Theme 2D Mutations and Cell Division (Inheritance) GC
- 18. Feb 26 Theme 3: Evolution CN
- 19. Mar 1 Lecture Test #2 (in class, 50 min, 10% of course): Themes 2B – 2D
- 20. Mar 3 Theme 3: Evolution CN
- 21. Mar 5 Theme 3: Evolution CN
- 22. Mar 8 Theme 4A: Mendelian Inheritance CN
- 23. Mar 10 Theme 4A: Mendelian Inheritance CN

24. Mar 12 Theme 4A: Mendelian Inheritance CN
25. Mar 15 Theme 4B: Population Genetics CN
26. Mar 17 Theme 4B: Population Genetics CN
27. Mar 19 Theme 4B: Population Genetics CN
28. Mar 22 Lecture Test #3 (in class, 50 min) Themes 3, 4A&B
29. Mar 24 Theme 4C: Selection, Species, and Speciation CN
30. Mar 26 Theme 4C: Selection, Species, and Speciation CN
31. Mar 29 Theme 4C: Selection, Species, and Speciation CN
32. Mar 31 Themes 5A&B: Phylogeny (Evolutionary Trees) and Macroevolution CN
- Apr. 2-5 Easter break, no classes
33. Apr 7 Themes 5A&B: Phylogeny (Evolutionary Trees) and Macroevolution CN
34. Apr 9 Themes 5A&B: Phylogeny (Evolutionary Trees) and Macroevolution CN
35. Apr 12 Theme 5C: History of Life CN
36. Apr 14 Theme 5C: History of Life CN
37. Registrar-scheduled final (Lecture Test #4)

LAB SCHEDULE Winter 2021

Important Reminders Regarding Laboratories:

Attendance is required at all laboratory classes for the duration of the scheduled lab time, and you may only attend your registered lab section. Assignments will not be accepted if you have an unexcused absence or partial absence from the lab in which data are collected. Laboratories will be synchronous and delivered live during the scheduled laboratory time (labs will not be recorded). Teaching assistants will be available in real-time for "office hours" during the scheduled lab time and then by email outside of lab time. Laboratory Assignments will be available on D2L over a designated period of time for students to complete before the deadline for each assignment/exercise. Refer to the Laboratory Schedules posted on D2L.

Online labs will occur on the following dates:

Date Exercise (Week of)

January 18 Laboratory 1

February 1 Laboratory 2

February 22 Laboratory 3

March 8 Laboratory 4

March 22 Laboratory 5

Course Outcomes:

- Explain why DNA is the genetic material in organisms and describe how DNA information is expressed in cells
- Explain how and why mutations occur and the relationship between mutations and evolution by natural selection
- Differentiate among the theories of evolution, the cell theory, and inheritance as uniting principles in biology and compare their historical contexts and evidence
- Analyze the implications, influences and major ways scientists study the theory of evolution
- Contrast single-gene dominant and recessive inheritance and recognize that phenotypes are not all single-gene phenomena

- Evaluate the relationship between environmental/climate changes and evolutionary changes over time
- Analyze phylogenetic trees and explain how they are made
- Collaborate with peers to describe, design and carry out scientific experiments
- Analyze scientific data collected from scientific experiments (student-conducted experiments and experiments described in the primary literature)
- Produce oral and written reports that communicate scientific information effectively

Electronically Approved - Apr 06 2021 16:48

Department Approval