



COURSE OUTLINE

1. Course: BIOL 311, Principles of Genetics - Fall 2020

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

Instructor	Email	Phone	Office	Hours
Dr. Robin Cuthbertson	rscuthbe@ucalgary.ca	TBA	TBA	TBA

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

Instructor	Email	Phone	Office	Hours
Dr. Robin Cuthbertson	rscuthbe@ucalgary.ca	TBA	TBA	TBA

Course Coordinator: Dr. Robin Cuthbertson rscuthbe@ucalgary.ca

Lab Coordinator: Jori Harrison harrisjb@ucalgary.ca

Instructors:

1st half of course: Dr. Robin Cuthbertson rscuthbe@ucalgary.ca

2nd half of course: To Be Announced

TAs: Please refer to our D2L site for the list of TA's and their contact information.

Email correspondence: Please use your U of C account for all email course correspondence with any member of the BIOL 311 teaching team.

Online Delivery Details:

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

Lectures will be online and asynchronous.

Lecture materials will be uploaded three times a week (MWF BY 5 PM) to the course D2L website. With asynchronous delivery, students will access these materials within their own schedule. Expectations are that students will make use of both their TA and lecture instructor for clarification of topics.

Labs will be delivered online and synchronously. Lab work may consist of Zoom meetings, individual work, or team-based work, following the schedule in the lab manual. Students are expected to attend all Zoom meetings, and to work with their teams weekly during their scheduled lab times.

All scheduled laboratories will begin the week of September 14, 2020. Students need to read the introduction and Lab #1 prior to attending the first lab and be comfortable with all terms used.

Course Site:

D2L: BIOL 311 L01-(Fall 2020)-Principles of Genetics

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 and 243.

Antirequisite(s):

Credit for Biology 311 and Medical Science 341 will not be allowed.

Successful completion of BIOL 311 is required for admission to all the specialty programs offered by the Department. Students are urged to complete this course in their second year to ensure timely completion of the program.

Learning Outcomes for BIOL 311: At the end of this course, you will be able to:

- Describe, using diagrams, the similarities and differences in chromosome behaviour between mitosis and meiosis
- Illustrate how chromosomal behaviour in meiosis underlies Mendel's laws
- Identify the inheritance pattern of traits by using pedigree analysis and an understanding of chromosome behaviour in meiosis
- Determine gene linkage and calculate genetic map distances by analyzing inheritance patterns using appropriate statistical methods
- Describe the epistatic relationship between genes in a given process based on phenotypic inheritance patterns
- Illustrate how different alleles of a gene can form using the physicochemical properties of nucleic acids and the molecular anatomy of genes in prokaryotes and eukaryotes
- Compare and contrast the regulation of gene expression in prokaryotes and eukaryotes
- Design experiments to evaluate the effects, if any, of mutations on gene expression
- Identify techniques that can be used to alter the genetic information in a given piece of DNA, and describe how they can be used for gene therapy
- Evaluate data mined from online databases to propose a hypothesis describing the molecular basis for a genetically-inheritable disease

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 assignment #1	3%	TBA
Lecture assignment #2	3%	TBA
Midterm Exam	32%	October 27, 24-hr exam window to write a 2-hour exam, asynchronous
Final Exam	32%	Scheduled by Registrar. Asynchronous. 24-hr exam window to write a 2-hour exam, due at the end of the scheduled exam time.
Laboratory	30%	See D2L for lab schedule

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 %	90 %	85 %	80%	76%	72 %	68 %	64%	60%	55 %	50 %

This course has 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.

5. **Scheduled Out-of-Class Activities:**

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

6. **Course Materials:**

Required Textbook(s):

Griffiths, Wessler, Carroll, Doebley, *An Introduction to Genetic Analysis 12th ed (10th or 11th ed. are also acceptable)*: Macmillan Learning.

Fixsen, W.D., Lavett, D.K., W.H. Freeman, *Solutions Megamannual for An Introduction to Genetic Analysis Online platform or 11th Edition (10th ed. is also acceptable)*: Macmillan Learning.

Flagg, R.O., *Carolina Drosophila Manual 5th Edition*: Carolina Biological Supply Company.

Students will also require the Biology 311 Laboratory Manual (To be downloaded from D2L).

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:**

Non-programmable calculators are permissible during examinations. The assignments, midterm, and final exam will be administered through D2L.

The midterm and final exam will be 2 hours in length, with 1 additional hour provided for technology-related issues. Time will be adjusted for SAS students if needed and accommodations for students will be done on a case-by-case basis. The final examination covers material from the 2nd half of the course (although builds off of content from the 1st half) and will be scheduled by the Registrar's Office.

IMPORTANT: It is the student's responsibility to ensure that they have adequate computer and internet access to write the exams. If a student encounters any technical issues starting an exam, 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. If a student's exam is suspended during the exam (lost internet connection, internet browser crashes etc.), they **MUST** provide evidence (photo/ screenshot/video).

The exams are closed book. You may not access your lecture notes or any other resources during exams. 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.

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 Center:** 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 misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- 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 (FOIPP). 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](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel: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.

Course Outcomes:

- describe, using diagrams, the similarities and differences in chromosome behaviour between mitosis and meiosis
- illustrate how chromosomal behaviour in meiosis underlies Mendel's laws
- identify the inheritance pattern of traits by using pedigree analysis and an understanding of chromosome behavior in meiosis.
- determine gene linkage and calculate genetic map distances by analyzing inheritance patterns using appropriate statistical methods
- describe the epistatic relationship between genes in a given process based on phenotypic inheritance patterns
- illustrate how different alleles of a gene can form using the physicochemical properties of nucleic acids and the molecular anatomy of genes in prokaryotes and eukaryotes
- compare and contrast the regulation of gene expression in prokaryotes and eukaryotes
- design experiments to evaluate the effects, if any, of mutations on gene expression
- identify techniques that can be used to alter the genetic information in a given piece of DNA, and describe how they can be used for gene therapy
- evaluate data mined from online databases to propose a hypothesis describing the molecular basis for a genetically-inheritable disease

Electronically Approved - Sep 03 2020 11:49

Department Approval