

COURSE SYLLABUS



COURSE TITLE: BIOL-232: Principles of Genetics

CLASS SECTION: 001

TERM: Winter 2023

COURSE CREDITS: 3

DELIVERY METHOD(S): In-person

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and WSÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.

Learn more about Camosun's [Territorial Acknowledgement](#).

For COVID-19 information please visit <https://camosun.ca/about/covid-19-updates>

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Geoffrey Morris

EMAIL: [morrising@camosun.ca](mailto:morrisg@camosun.ca)

OFFICE: Fisher 340D

HOURS: Monday 12:30-2:30; Wednesday 9:30-11:30

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR DESCRIPTION

The cellular and molecular basis of the transmission of hereditary characteristics. Topics include: Mendelian inheritance and its cytological basis, gene action in biochemical pathways, microbial genetics, linkage and gene mapping, DNA as the genetic material, the genetic code, gene action in development and differentiation and the fundamentals of genetic engineering.

PREREQUISITE(S):

All of:

- C in BIOL 231

CO-REQUISITE(S):

All of:

- C in CHEM 255

EXCLUSION(S):

Not Applicable

COURSE LEARNING OUTCOMES / OBJECTIVES

At the end of the course students will be able to:

1. Demonstrate the basic principles of Mendelian and molecular genetics.
2. Use standard techniques of genetic analysis in laboratory experiments.
3. Apply principles of genetics to ethical issues relating to molecular genetics.
4. Define and explain basic genetics terminology.
5. Use and apply genetic principles in problem solving.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Textbook: Genetics: A Conceptual Approach, seventh edition, Pierce, MacMillan Learning, 2020. You will need access to the MacMillan Achieve website to complete certain assignments. The textbook may be purchased from the Camosun Bookstore or online.
(Required)

Lab Manual Biology 232 lab manual is available through the course D2L website. You will be responsible for printing and reading the labs, and following any pre-lab instructions before the lab session.
(Required):

Lecture Outlines: Lectures will be delivered in a PowerPoint format. Copies of slides will be made available on the Biology 232 D2L website.

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING (%)
Quizzes (Reading Quizzes)	10
Assignments	15
Lab Exam	25
Lecture Midterm 1	12.5
Lecture Midterm 2	12.5
Lecture Final Exam	25
	TOTAL
	100

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information.
<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

Lectures: Wednesday 1:30pm-2:50pm Fisher 266
 Friday 11:00am-12:20pm Fisher 266

Labs: Friday 1:30pm-4:20pm Fisher 222

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Week	Chap.	Lecture Topics (Wednesday/Friday)	Labs (Friday)
1 (Jan 9-13)	1 2	Introduction to Genetics Chromosome and Cell Reproduction	Introduction and Lab Skills
2 (Jan 16-20)	3 4	Basic Principles of Heredity Sex Determination & Sex-Linked Characteristics	Sordaria Part 1 Mutagenesis Part 1
3 (Jan 23-27)	4 5 7	Sex Determination and Sex-Linked Characteristics Extensions and Modifications of Basic Principles Linkage, Recombination, and Eukaryotic Gene Mapping	Proteomics Field Trip
4 (Jan 30-Feb 3)	7 6	Linkage, Recombination, and Eukaryotic Gene Mapping Pedigree Analysis, Applications, and Genetic Testing	Sordaria Part 2 Serratia Part 1
5 (Feb 6-10)	6 25	Pedigree Analysis, Applications, and Genetic Testing Population Genetics	BC Cancer Field Trip
6 (Feb 13-17)	8	Chromosome Variation Lecture Exam (Chapters 1-7, 25)	Mutagenesis Part 2 Serratia Part 2
7 (Feb 20-24)		No Lecture – Reading Break	No Lab
8 (Feb 27-Mar 3)	9 10 11	Bacterial and Viral Genetics Systems DNA: The Chemical Nature of the Gene Chromosome Structure and Organelle DNA	CRISPR Part 1 - Intro
9 (Mar 6-10)	11 12	Chromosome Structure and Organelle DNA DNA Replication and Recombination	CRISPR Part 2 – Gene Editing
10 (Mar 13-17)	12 13	DNA Replication and Recombination Transcription	CRISPR Part 3 – DNA Extraction and PCR
11 (Mar 20-24)	14	Lecture Exam 2 (Chapters 8-12) RNA Molecules and RNA Processing	CRISPR Part 4 – Electrophoresis
12 (Mar 27-31)	15 16	The Genetics Code and Translation Control of Gene Expression in Bacteria	CRISPR Part 5 – Results
13 (Apr 3-7)	16 17	Control of Gene Expression in Bacteria Control of Gene Expression in Eukaryotes	No Lab – Good Friday
14 (Apr 10-14)	18	Gene Mutations and DNA Repair Review	Lab Exam
Exam Period (Apr 17-25)		Final Exam (scheduled by Registrar)	

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

COURSE GUIDELINES & EXPECTATIONS

Written Work

Lecture and lab assignments may be assigned at the instructor's discretion. It is the student's responsibility to be informed of any work expected and the dates the work is due. Assignments may be intended to be completed as individuals or as groups. The instructor will make clear which is which. Work intended to be submitted by an individual must be completed independently, keeping in mind student conduct requirements. Work intended for completion by a group must not be completed by an individual. Each person in a group will receive the same mark on any group work.

Unless otherwise indicated, all submitted written material (including numerical entries in data tables) must be prepared using word processing (typically MS Word) or graphing software (e.g. Excel). The only exceptions are calculations and some graphs, which may be submitted handwritten or hand drawn. Any exceptions will be clearly indicated. Work submitted inappropriately formatted, which includes last-minute handwritten corrections, will not be marked until all formatting is correct. Since correcting formatting requires time, this will likely mean a late penalty will be assessed.

Late Penalties

All assignments must be handed in by the time indicated on the assignment. Be sure to submit all assignments on time to avoid deductions. Where possible, late assignments will be graded but marks equivalent to 15% of the total value of the assignment will be deducted for each day (or partial day) past the deadline. For example, an assignment submitted two hours late would be deducted 15%; an assignment submitted 40 hours late would be deducted 30%.

Exams

The lab and lecture exam dates are set; please refer to the schedule above. Should an emergency or issue arise that prevents you from completing an exam at the scheduled time, you are required to contact your instructor ASAP and **before** the noted scheduled time for approval to arrange for a deferred exam date or re-weighting overall grade. Failure to obtain prior approval will result in the exam being automatically marked zero. No re-writes are allowed once an exam has been started or attempted. Study guides for each exam will be available on D2L closer to the exam dates.

Laboratory Safety & Attendance

Nothing is more important to the instructor than students enjoying a safe class and lab environment. Consider the following issues:

Lab footwear	<ul style="list-style-type: none">For safety reasons WorkSafeBC mandates, and federal regulations require, that students are required to wear closed shoes in all lab times. Flip flops, sandals or shoes with holes are not acceptable. Other footwear posing an instability risk (e.g. high heels or bicycle shoes) are prohibited.
Eating & drinking	<ul style="list-style-type: none">Eating or drinking anything in the lab is a violation of federal regulations, so absolutely nothing may be ingested while in the lab. Chewing gum and applying makeup or lip balm are similarly prohibited. No exceptions will be made, even for medications.If something must be consumed, then it may be taken out of the lab.
Hair	<ul style="list-style-type: none">It is recommended that long hair be tied securely to prevent it from being exposed to lab equipment.
Handwashing	<ul style="list-style-type: none">Hands should be thoroughly washed after removing lab coats and before leaving the lab.

Lab work is critical to the course objectives and much effort has been expended to ensure the lab experience is interesting and educational, both from academic and practical points of view. Therefore, attendance throughout the entire laboratory session is mandatory and will be noted. Labs will start promptly because

information necessary for performing the laboratory correctly and safely is given at the beginning of the lab. Late attendance may result in inability to attend the lab and subsequent loss of credit for any assignments. Lateness in arriving, failure to attend the lab or leaving the lab before its scheduled finish time will result in forfeiting credit for that lab, including any written assignments. If a lab session is missed, another student's data may not be used to complete a lab assignment for credit. Exceptions can be made at the instructor's discretion in legitimate cases of emergency (e.g. illness); in such cases the instructor must receive advance notification and documented evidence of the situation (e.g. medical certificate) and grant approval for any accommodation. In cases when a lab is done over two weeks, missing one of the weeks without instructor approval will result in a 50% reduction in the grade for any assignment associated with that lab.

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures"

(<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at

<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-3703841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.