MBG*1000 Genetics and Society

Winter 2024
Section(s): 01

Department of Molecular and Cellular Biology
Credit Weight: 0.50
Version 1.00 - January 05, 2024

---

1 Course Details

1.1 Calendar Description

This course covers the basic principles of genetics at work in human society. The roles of genes and inheritance in the biology of humans and the organisms with which we interact. Introduction to some of the social and ethical consequences of genetic knowledge and practice. This is a science course designed primarily for students in the Arts or Social and Applied Human Sciences.

Restrictions: Students in the BAS, BSC and BSC.ENV program cannot take this course for credit.

1.2 Course Description

Few aspects of modern life are not influenced by the enormous advances in genetics and molecular biology that took place during the second half of the 20^{th} century and that continue apace today in the “genomic age”. While genetic intervention is hailed by some as the solution to many of our most pressing medical, agricultural, and environmental concerns, it also has its critics, and presents new dilemmas. In **Genetics and Society,** we present the general principles of genetics, show how they operate in humans and other organisms and examine some of the ethical and social issues that arise for individuals and society.

1.3 Timetable

Please check WebAdvisor for any last-minute changes. Be aware that this schedule is subject to change in extenuating circumstances.

- **Lectures:** Monday, Wednesday and Friday; 11:30 am – 12:20 pm. Lectures will be delivered in person in RICH 2520.
- **Seminars:** Four sections are all in person and scheduled on Mondays. Seminars start on January 16th.

  Section *0101: 12:30-1:20 pm in MCKN 238

Section *0102: 12:30-1:20 pm in MACS 129
Section *0103: 1:30-2:20 pm in MACS 129
Section *0104: 1:30-2:20 pm in ROZH 106
Section *0105: 2:30-3:20 pm in MACS 129
There is NO SEMINAR on Monday, January 8th

1.4 Final Exam

The final exam will be held on April 11, 2024, from 11:30 AM - 1:30 PM, the location is TBD, check WebAdvisor for updates.

ALL exams (midterms and the final) may be online using Lockdown Browser + Respondus Monitor.

- Students who have human rights concerns regarding the use of Respondus Monitor can request an alternate mode of in-person evaluation during the same time period. Requests have to be submitted to Dr. Cooper by e-mail BY FRIDAY, JANUARY 26th at 4 pm.

---

2 Instructional Support

The instructional support for this course consists of one instructor to lead lectures and teaching assistants (TAs) to lead seminars and support sessions as outlined. Graduate students in the College of Biological Sciences have been assigned as TAs.

These graduate students have heavy academic and research schedules. We ask that students DO NOT contact them directly outside the scheduled seminar time slots. Instead, please use the designated discussion board on CourseLink.

2.1 Instructional Support Team

Instructor:	Colin Cooper Dr.
Email:	ccoope08@uoguelph.ca
Office Hours:	Will be posted on CourseLink.

---

3 Learning Resources

There is no textbook for this course. Lecture materials, assigned readings and online resources will be provided.

3.1 Required Resources

Courselink (Website)

https://courselink.uoguelph.ca

The CourseLink site is a critical resource for this course. All lecture materials, supporting materials and assignments in addition to general course information, special announcements and exam information will be posted. Lastly, a detailed outline of the course operation will be provided on CourseLink (and will be discussed in the first lecture). Please ensure you consult this site frequently.

While this course will be offered in person, all course evaluations (six assignments, two midterms and one final exam) may be completed online. A computer capable of running Respondus Lockdown software with a functional camera and reliable internet access will be essential.

---

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Describe and understand the flow of genetic information within a eukaryotic cell.
2. Describe and understand the eukaryotic cell cycle as it relates to genome stability.
3. Describe and understand the various modes of genetic inheritance.
4. Demonstrate some understanding of the predictive value of genetic information, and its limits.
5. Describe various ways by which genetic information can be altered by naturally occuring or deliberate means.
6. Understand the impact of alterations to genetic material in individuals and society.

4.2 Note

Learning outcomes will be assessed in the relevant assignments, midterm and final examinations.

---

5 Teaching and Learning Activities

In lectures dealing with the underlying cell and molecular biology we will explore the science of genetics. This will provide a foundation from which to evaluate the information in genomes. We will explore the occurrence and the effects of natural and induced mutations (e.g. genetic disease), and it's inheritance. We will discuss ways in which genes can be altered through human intervention, and why we do this. Finally, we will discuss the diversity of genetic information in close relationships with humans (e.g. viruses) and how that impacts

us. Material given in the lectures is the responsibility of each student. Students are expected to attend all lectures and all seminars.

5.1 Lecture

A list of questions (and topics) we will explore through lectures & seminars.

Topics:	Note that these topics may be subject to change.
	Where are the genes? Chromatin and chromosomes
	Why is the genome so stable? The cell cycle, DNA and its replication, mitosis
	What is a gene, anyway? A molecular definition of genes
	How is function encoded in genes? Transcription, translation, and things in-between
	Why are there so many kinds of organisms? Mutation provides the variation on which natural selection acts.
	Why do we do it? Meiosis shuffles the genetic deck.
	Human genetics and heredity.
	Genetic diseases and medicine.
	Microbes, viruses and human genetics - how we interact this genomes in our direct environment.

5.2 Seminar

Semester

Topics:	TENTATIVE SCHEDULE OF IMPORTANT DATES
	Please note that this schedule is subject to change.

Week	Description
Jan. 8	No seminar
Jan. 15	Meet your TA. General information about seminars.
Jan. 22	Assignment 1
Jan. 29	Assignment 2
Feb. 5	Q & A Help session in preparation for Midterm 1
Feb. 7	Midterm 1 during class time
Feb. 12	Assignment 3
Feb. 19-23	Winter Break
Feb. 26	No seminar
Mar. 4	Assignment 4
Mar. 11	Q & A Help session in preparation for Midterm 2
Mar. 13	Midterm 2 during class time
Mar. 18	No seminar

Week	Description
Mar 25	Assignment 5
Apr. 1	Assignment 6

5.3 Seminars

The seminars in MBG*1000 are designed to improve problem-solving skills and reinforce concepts and terminology introduced in lectures. The seminar schedule that outlines the relevant course material and due dates will be made available on CourseLink. There are approximately 10 seminar sessions and 6 seminar assignments. Assignment questions will provide the framework for the seminar sessions and will be posted on CourseLink. Teaching Assistants will briefly introduce the major concepts at the start of the seminar. Students will then work in groups to discuss the Assignment questions with the TA guiding discussions as needed. The TA will NOT provide the answers to the questions. **While group work is encouraged, each student has to submit their individual Assignment by the outlined due date. Students are NOT allowed to copy each other's work. Students are responsible for ALL material covered in seminars; similar questions WILL appear on midterm and final exams.** To find the information needed to complete the seminar assignments, you will need to consult your lecture notes and/or on-line resources. The best 5 of 6 seminar assignments will contribute to your final course grade. For more information on the seminar assignments, assignment deadlines and the marking rubrics, please visit CourseLink and read the seminar assignment guidelines.

All assesments may be monitored using anti-plagiarism software.

---

6 Assessments

6.1 Assessment Details

Midterm #1 (20%)
Learning Outcome: 1, 2

Midterm #2 (20%)
Learning Outcome: 1, 2, 3, 4, 4, 5

Seminar Assignments (25%)
Learning Outcome: 1, 2, 3, 4, 4, 5, 6

- Best 5 of 6
- 5% each (x5) = 25%

Final Examination (35%)
Due: Thu, Apr 11, 11:30 AM - 1:30 PM, TBD
Learning Outcome: 1, 2, 3, 4, 4, 5, 6

6.2 Note

- Students who miss a midterm because of medical or compassionate reasons must provide Dr. Cooper with appropriate written documentation (from a medical professional or their program counsellor) as soon as possible. If acceptable documentation is received for a missed midterm, **the weighting of the midterm will be added to the final exam.** In the absence of acceptable documentation, the student will receive zero for the assessment.
- If a student misses 2 or more of the 6 seminar assignments, the value of the missed assignment(s) will be transferred to the final exam provided acceptable documentation (from a medical professional or their program counsellor) has been received. For example, if a student submits only 4 of 6 assignments, then 5% will be transferred to the final exam. In the absence of acceptable documentation, the student will receive zero for the missed assignment(s).
- Students must complete all assessments individually. Students are to write all assessments with original work, copying materials from any other source constitutes plagiarism and will be reported and dealt with according to the guidelines of the undergraduate calendar. Students are also not allowed to use generative artificial intelligence (AI) programs to generate material for assessments. If this is detected, it will be reported and dealt with according to the guidelines of the undergraduate calendar.

---

7 Course Statements

7.1 Exam Procedure

Details of examination procedures will be provided in CourseLink.

8 Department of Molecular and Cellular Biology Statements

8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. B.Sc. Academic Advising or Program Counsellors

8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. http://www.learningcommons.uoguelph.ca/
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help and http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help

8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. https://www.uoguelph.ca/counselling/
- Student Health Services is located on campus and is available to provide medical attention. https://www.uoguelph.ca/studenthealthservices/clinic
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. http://www.selfregulationskills.ca/

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) http://www.e-laws.gov.on.ca/index.html. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml)

8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

9 University Statements

9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Graduate Calendar - Grounds for Academic Consideration
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions
https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml

9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website
https://www.uoguelph.ca/sas

For Ridgetown students, information can be found on the Ridgetown SAS website
https://www.ridgetownc.com/services/accessibilityservices.cfm

9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars

9.9 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).