



MBG*4020 - Genetics of Companion Animals

Fall 2026 Course Outline

Section: 01

Credits: 0.50

Land Acknowledgement: Guelph

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer respect to our Anishinaabe, Haudenosaunee and Métis neighbours. Today, this gathering place is home to many First Nations, Inuit, and Métis peoples and acknowledging them reminds us of our important connection to this land where we work and learn.

The text above is the university's standard piece put into every course outline. But I think we should all think about our place in the world so I have my own, researched and thought about personally . . . I would like to acknowledge that I live, work and play on land that is part of the traditional lands of the Mississauga, Mississaugas of the Credit First Nation, Attiwonderonk (Neutral), Anishinabewaki, Wendake-Nionwentsio and Haudenosaunee peoples within the Treaty 3 and Treaty 20 territories. Like many of my pre-Internet generation I grew up largely unaware of First Nations issues and history, my understanding was limited by what little we were taught in school or through media coverage. But ignorance is not bliss and as awareness and information increases, I strive to learn more and gain a better understanding about the history, traditions and issues of these peoples and the land we share and I work to care for that land for current and future generations.

Calendar Description

This course explores theoretical and applied aspects of breeding programs for performance, pleasure and hobby animal populations to enhance genetic selection and population viability. Case studies are used to explore the theory and practice of designing practical and sustainable breeding programs that integrate molecular genetics, animal breeding and statistical genomics for a variety of single and multiple birth species.

Prerequisite(s): MBG*3060

Department(s): Department of Animal Biosciences

Equate(s): ANSC*4020

Course Fit Within Program/Curriculum

MBG-4020 is the third in a series of courses progressing from MBG-2400 and MBG-3060. It is designed as a capstone course that brings together new theory as well as theory covered in MBG-2400 and 3060 in a framework of practical application to designing and running a successful breeding program for companion animal species.

Lecture Schedule

TuTh 8:30am-9:50am in RICH*2520 (9/10 to 12/22)

Instructor Information

Andrew Robinson

Email: andyr@uoguelph.ca

Learning Resources

Course content information will be posted on CourseLink in advance, usually in the form of class presentation notes and slides, pre-recorded video and links to resources on the web. Your notes from MBG-3060 Quantitative Genetics will provide valuable background information for this course. Copies of a representative set of course notes from MBG-3060 will be posted on CourseLink in case you no longer have your notes.

Learning Outcomes

Since the beginning of domestication, humans have managed animal populations for many purposes. Managing the genetic resources and variability of small populations under a number of constraints requires a balanced approach that includes a sound knowledge of the theory and a practical approach to problem solving. By the end of this course, you will be able to manage a breeding program and understand:

Cost of Textbooks and Learning Resources

There are no additional resources - textbook etc - that you need to purchase for this course.

Course Learning Outcomes

1. The impact of population size on the success of the program
2. Setting up, achieving and monitoring selection goals
3. Objectively and consistently measuring and assessing phenotypes
4. Applying appropriate statistical genomics analyses to the phenotypes
5. The effective and appropriate incorporation of molecular genetic information
6. How genetics as a science interacts with genetics as a social and legal concept

Schedule of Topics and Assignments

Week of	Topic	Activities	Due
9/10	Intro class		
9/15	Population Size - Past, Present and Future		Weekly Quiz
9/22	Genetic Variability		Weekly Quiz
9/29	Selection - Developing Goals and Recording Phenotypes		Weekly Quiz
10/6	EBVs		Weekly Quiz
10/8	EBVs		Midterm Exam (see CourseLink for details)
10/13		Fall Study Break	
10/22	Combining EBVs to Match Selection Goals		Weekly Quiz
10/27	Genomics		Weekly Quiz
11/3	Mating Schemes		Weekly Quiz
11/10	Registration and Data Recording		Weekly Quiz
11/17	Undoing Selection, Genetic Consequences		Weekly Quiz
11/24	Holistic Application to Breeding Programs		Weekly Quiz
12/1	Wrap up and Review		Weekly Quiz

Assessment Breakdown

Name	Weighting (%)	Date
Quizzes	36%	Weekly - Mondays at 11:59 pm (see CourseLink for details)
Online Midterm Exam	19%	October 15 and 16 (see CourseLink for details)
Final Exam	45%	TBA
Total	100%	



Assessment Details

Quizzes

Quizzes

36%

9 @ 4%, there are 10 weekly quizzes through the semester with the lowest quiz grade being dropped so the 9 best quiz grades are kept. Generally quizzes are due Tuesdays at 11:59pm but see CourseLink for exact availability and deadline dates. Weekly quizzes that cover concepts that involve a lot of calculations are paired with a practice quiz to help you master the calculations. Weekly quizzes that are more conceptual typically do not have a practice quiz. When there is a corresponding practice quiz, the practice quiz has an unlimited number of attempts and feedback is provided immediately. The graded quizzes each have two attempts as a safety net in case a problem is encountered with the first attempt. Please note that although the grade for the first attempt will appear in the grade book, the solutions to the quiz will not be available before the quiz deadline.

Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6

Midterm

Online Midterm Exam

19%

The 19% online midterm quiz is done through CourseLink as a time-limited quiz. Once you open the midterm quiz, you have 2 hours in which to complete it. The midterm quiz is more like a real midterm than the weekly quizzes so unlike the weekly quizzes, you have just one attempt at the midterm quiz and the grade will not be released until after the midterm period ends and all the academic consideration requests are resolved. You have a span of 2 days in which to do the midterm, there is no extended deadline option for the midterm quiz so don't leave it to the last minute. If you are unable to complete the online midterm quiz and wish to request academic consideration, contact the instructor as soon as possible.

If you are registered with SAS and are given extra time accommodations on exams, those accommodations are provided directly by SAS and the midterm time is adjusted accordingly. Once the Midterm quiz appears in Courselink, please check your midterm duration to make sure you have the correct accommodations. Note that 1.5x would be 3 hours or 180 minutes. If your accommodations include more than additional time, contact the instructor and your SAS advisor well in advance to determine the best approach.

Course Learning Outcomes Assessed: 1, 2, 3

Exam

Final Examination

45%

The in-person final exam is worth 45%. The final exam focuses on understanding course material and problem solving relating to aspects of companion animal breeding programs. The emphasis is on understanding rather than memorization.

Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6

Last Day to Drop Course

The final day to drop Fall 2026 courses without academic penalty is the last day of classes: December 04

After this date, a mark will be recorded, whether course work is completed or not (a zero is assigned for missed tests/assignments). This mark will show on the student's transcript and will be calculated into their average.

Course Technology and Technical Support

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink
- Zoom
- MS Teams

To help ensure you have the best learning experience possible, please review the list of system and software requirements (<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>).

CourseLink System Requirements

You are responsible for ensuring that your computer system meets the necessary system requirements (<https://courselink.uoguelph.ca/d2l/systemCheck>). Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

CourseLink

This course is being offered using CourseLink (powered by D2L's Brightspace), the University of Guelph's online learning management system (LMS). By using this service, you agree to comply with the University of Guelph's Access and Privacy Guidelines (<http://www.uoguelph.ca/web/privacy/>). Please visit the D2L website to review the Brightspace privacy statement (<https://www.d2l.com/legal/privacy/>) and Brightspace Learning Environment web accessibility standards (<https://www.d2l.com/accessibility/standards/>).

CourseLink Technical Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

Email: courselink@uoguelph.ca

Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478

Support Hours (Eastern Time):

- Monday thru Friday: 8:30 am–8:30 pm
- Saturday: 10:00 am–4:00 pm
- Sunday: 12:00 pm–6:00 pm

Additional Course Technologies

Zoom

This course may use Zoom for lectures. Check your system requirements (<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>) to ensure you will be able to participate.

Course Standard Statements

Grading Policies

For quizzes, consult the CourseLink site for the deadlines. Quizzes are open for eight days (at least) from Monday to the following Tuesday and the results are released immediately after the deadline. Quiz results are released immediately after the deadline and since the answers are available to all, there is **no late option for a quiz**. For the Online Midterm Quiz, you have 2 hours within the availability window in which to complete the Online Midterm and there is **no late option for the online midterm quiz**. If you are unable to complete any quiz for reasons you think warrant academic consideration, contact the instructor as soon as possible. If you are registered with SAS for additional time on quizzes, since you have 8 days in which to do these weekly quizzes, your extra-time accommodation is not needed. If you are registered with SAS for other types of accommodations, please email the instructor (andyr@uoguelph.ca) and your SAS advisor well in advance of the first quiz so that we can collectively determine the best way to handle your individual accommodation.

Student Technology

Technology is vital to success in this course. It is your responsibility to make sure you have access to a good Internet connection and a suitable computer or electronic device such as a tablet or smartphone. A web camera, microphone and speakers/headphones will be required for office hours. Your device needs to be capable of browsing and reviewing recorded or live video, audio and printed content from CourseLink and across the internet. The University of Guelph's online Learning Management System (aka CourseLink) is integral to the delivery of this course. It is also your responsibility to ensure that you can access the course materials and complete online course requirements, such as quizzes on CourseLink, within the time allotted. If CourseLink is not accessible for a significant period of time (not including scheduled maintenance) deemed by the instructor to have had an impact on students' abilities to complete quizzes, deadlines will be extended.

In addition to accessing the CourseLink website via a suitable web browser, additional software and applications may be used in the delivery of this course as we move to new instructional models discovered during Covid. These will include but not be limited to Zoom, MS Teams, MSOffice365 (Word, PowerPoint, Excel), email and a multi-purpose media player. The instructor will provide recommendations for software applications that are suitable for the purposes of the course but you will be ultimately responsible for finding, installing and maintaining any applications you use for this course.

In class, you may need to use technology to connect to course activities, as well as take notes and interact with the course material. This should be done in a way that respects your fellow students by not creating undue distractions (see below under Online Behaviour). Also keep in mind that if your technology uses the University's wireless network to access the Internet, the University's acceptable use policy also comes into play.

Online Behaviour - "Netiquette"

In light of the growing use of online components in this course, the University has provided the following wording about netiquette.

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online

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- Copying or presenting someone else's work as your own
 - Adapting information from the Internet without using proper citations or references
 - Buying or selling term papers or assignments
 - Posting or selling course materials to course notes websites
 - Having someone else complete your quiz or completing a quiz for/with another student
 - Stating false claims about lost quiz answers or other assignment submissions
 - Threatening or harassing a student or instructor online
 - Discriminating against fellow students, instructors and/or TAs
 - Using the course website to promote profit-driven products or services
 - Attempting to compromise the security or functionality of the learning management system
 - Sharing your user name and password
 - Recording lectures without the permission of the instructor

As a specific note about online meetings, **when joining online meetings, please ensure your microphone is muted when you first connect**. Most of the issues around connection quality and background distractions come from open microphones. For your own bandwidth management, you may also want to mute your video to reduce the amount of information passing through your internet connection.

Recording of Online Course Activities

The instructor will record lectures and post those as videos throughout the semester within a few days after each lecture. The video will have real-time video of the image shown on the classroom projector overlaid with the audio of the instructor's comments, have an available transcript and may include hand-written comments, other media etc. These videos will represent the officially sanctioned recorded media for the lecture and are provided for the convenience of students officially registered in the course and may not be reproduced, or transmitted to others, without the express written consent of the instructor. Note that there may be circumstances in which not all of a lecture is recorded so the video is an additional aid and not necessarily a replacement for attending class, learning the material on your own and through the quizzes and/or additional media provided.

As a result of accessibility needs, any or all of the learning activities may be recorded by the instructor or TAs and posted to CourseLink, YouTube or MS Streams for grading and dissemination. As a result, individual students may be recorded during these sessions. By enrolling in this course, it is assumed that students agree to the possibility of being recorded during classes or other "live" course activities.

If you prefer not to be distinguishable during a recording, you may:

1. turn off your camera
2. mute your microphone (you should always mute your microphone when not participating anyway)
3. edit your identification in the online session or application (e.g. use your initials instead)
4. use the chat function to pose questions.

Students who express to the instructor that they, or a reference to their name or person, do not wish to be recorded may discuss possible alternatives or accommodations with the instructor.

Standard Statements for Undergraduate Courses

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 discourages misconduct. 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.

The Academic Misconduct Policy (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/>) is outlined in the Undergraduate Calendar.

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 10 business days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). For students at the Guelph campus, information can be found on the SAS website. (<https://www.uoguelph.ca/sas>)

Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/>).

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.

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 undergraduate students 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 the Undergraduate Calendar - Dropping Courses (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/>).

Email Communication

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

Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (<https://wellness.uoguelph.ca/>). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (<https://wellness.uoguelph.ca/navigators>) who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources (<https://wellness.uoguelph.ca/shine-this-year>). The Student Wellness team are here to help and welcome the opportunity to connect with you.

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).

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.

Resources

The Academic Calendars (<http://www.uoguelph.ca/registrar/calendars/?index>) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

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. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration. (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/>)