



MBG*4020 Genetics of Companion Animals

Fall 2021

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - September 08, 2021

1 Course Details

1.1 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.

Pre-Requisites: MBG*3060
Equates: ANSC*4020

1.2 Timetable

Class Times – Tuesday and Thursday 1:00pm – 2:20 pm - THRN (Thornborough) Rm. 1200

Note that this course is scheduled for in-person delivery so lectures will be delivered in-person as noted above. Pandemic restrictions in place at the time of each class must be followed by everyone according to the guidelines provided by the University and the local public health unit. This may include but not be limited to a vaccination requirement, proper use of appropriate PPE, hand sanitation, social distancing and other measures. Failure to comply with restrictions that are in place at the time of a class could result in the immediate cancelation of the class. Students would still be responsible for learning the material that was to be covered in that class regardless of the cancelation.

COVID-19 Disclaimer: please be aware that the information on course delivery, accessibility and examinations presented in this outline were developed based on current University guidelines. However, due to the continuously evolving situation and resulting changes in public health recommendations, the format and delivery of this course may be revised with limited notice.

1.3 Final Exam

Final Exam: December 6th 7:00-9:00pm,

Details can change, please consult Webadvisor and Courselink

2 Instructional Support

2.1 Instructional Support Team

Instructor: Andy Robinson
Email: andyr@uoguelph.ca
Office: ANNU 122 or Virtual
Office Hours: Office hours will be virtual using Microsoft Teams for Fall 2021 in light of the pandemic restrictions regarding office spaces at the time of writing. Watch for office hours posted on the home page of the MBG-4020 Courselink site. Since I am less likely to be in my office, if you need to reach me please call or text me on my cell phone (see Courselink site) but no earlier than 8:00am or later than 10:00pm Eastern Time in fairness to the others in my life. Otherwise use email.

2.2 Teaching Assistants

Teaching Assistant (GTA): Renee Bongers
Email: rbongers@uoguelph.ca
Teaching Assistant (GTA): Hannah Sweett
Email: hsweett@uoguelph.ca

3 Learning Resources

3.1 Additional Resources

Other Resources (Other)

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.

3.2 Course Technology and Technical Support

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Zoom
- Teams (via Office 365)
- Respondus Lockdown Browser

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. 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).

<http://spaces.uoguelph.ca/ed/system-requirements/>
<https://courselink.uoguelph.ca/d2l/systemCheck>

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. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards.

<http://www.uoguelph.ca/web/privacy/> <https://www.d2l.com/legal/privacy/>
<https://www.d2l.com/accessibility/standards/>

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

3.2 Additional Course Technologies

Teams (via Office 365)

Office 365 Teams is a collaboration service that provides shared conversation spaces to help teams coordinate and communicate information. This course will use Teams for one on one meetings with your Instructor. It is recommended that you use the desktop version of Teams. As a student you are responsible for learning how to use Teams and it's features.

For Teams Support visit the CCS website for more information.

<https://www.uoguelph.ca/ccs/services/office365/teams>

Zoom

This course will use Zoom for lectures. Check your system requirements to ensure you will be able to participate.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

Webex

Webex is a web conferencing tool that allows participants to connect with others anywhere in the world through the use of video and/or audio as well as content sharing.

For support using Webex Support visit the CCS website.

<https://www.uoguelph.ca/ccs/webex>

4 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:

4.1 Course Learning Outcomes

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

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
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5 Teaching and Learning Activities

5.1 Lecture

Topics:

Lecture Content / Schedule

Week Topic(s)

Sept
13 Population Size - Past, Present and Future

Sept
20 Genetic Variability

Sept
27 Selection - Developing Goals and Recording Phenotypes

Oct 4 EBVs

Oct 11 **Fall Break**, EBVs

Oct 18 Combining EBVs to Match Selection Goals

Oct 25 Genomics

Nov 1 Mating Schemes

Nov 8 Registration and Data Recording

Nov 15 Undoing Selection, Genetic Consequences

Nov 22 Holistic Application to Breeding Programs

Nov 29 Wrap up and Review

Course content and reference material will be posted on CourseLink regularly in advance of the class(es) where they are discussed.

NOTE that there is **no class Tuesday October 12, 2021** due to the Fall Break. Instead that class will be made up on Thursday December 2, 2021 at the usual time.

Also, please note that due to the fluidity of the ongoing Covid-19 situation, the University may opt to change restrictions and those changes could very likely have an impact on this schedule.

Pandemic restrictions in place at the time of each lecture must be followed by everyone according to the guidelines provided by the University and the local public health unit. The pandemic is a community problem and we all need to actively participate in a community solution. Restrictions may include but not be limited to a vaccination requirement, proper use of appropriate PPE, hand sanitation, social distancing and other measures. Failure to comply with restrictions that are in place at the time of the lecture could result in the immediate cancelation of that lecture. Students would still be responsible for learning the material that was to be covered in that lecture regardless of the cancelation.

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Quizzies	36

Name	Scheme A (%)
Online Midterm Exam	19
Final Examination	45
Total	100

6.2 Assessment Details

Quizzes (36%)

Learning Outcome: 1, 2, 3, 4, 5, 6

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.

Online Midterm Exam (19%)

Date: Oct 14 and 15 (see CourseLink for details)

Learning Outcome: 1, 2, 3

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. 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.***

Final Examination (45%)

Date: TBD Consult Courselink for details

Learning Outcome: 1, 2, 3, 4, 5, 6

The final exam is worth 45% and as of the time of writing this, scheduled to be written in-person. Should the pandemic restrictions change before the final exam, a suitable alternate format of final exam will be announced in class and on Courselink. 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.

7 Course Statements

7.1 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.

7.2 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, due to the ongoing Covid-19 restrictions additional software and applications will be used in the delivery of this course. These will include but not be limited to Zoom, Webex, 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 events 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.

7.3 Online Behaviour - "Netiquette"

In light of the ongoing Covid-19 pandemic and restrictions and the online components of this

course in Fall 2021, 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
- 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.

7.4 Recording of Online Course Activities

The instructor will record lectures and post edited 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 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 learning the material on your own and through the quizzes and 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.

8 University Statements

8.1 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.

8.2 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>

8.3 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>

8.4 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.

8.5 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 book their exams at least 7 days in advance and not later than the 40th Class Day.

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>

8.6 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>

8.7 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.

8.8 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>

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

8.10 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).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
