

Course Outline Form: Fall 2017

General Information

Course Code: MBG*2400

Course Title: Fundamentals of Plant and Animal Genetics

Course Description:

Fundamental aspects of plant and animal genetics are covered in this course including the chromosomal basis of inheritance, natural and artificial selection, domestication, epigenetics and quantitative traits. Population dynamics and the effect of selection on allele frequencies will be introduced with examples from agricultural crop and animal species and companion animal species. Genomics will be introduced with an emphasis on the development and use of molecular genetic markers in marker-assisted selection.

Credit Weight: 0.5

Academic Department (or campus): Animal Biosciences and Plant Agriculture

Campus: Guelph

Semester Offering: Fall 2017

Class Schedule and Location:

Lecture: Monday / Wednesday / Friday 11:30 am – 12:20 pm in Rozanski Hall Rm 101

Labs:

Sections are split into cohorts and the lab activities depend upon which cohort you are in. The cohorts start one week apart and finish one week apart. Labs start the week of September 11 for Cohort 1 and September 18 for Cohort 2 and meet weekly after that except for the short week at the Fall Study Break. In WebAdvisor it shows two rooms for each lab. In practice, you will alternate between lab rooms from week to week. The first week of the lab exercise you will meet in Crop Science 121B and the second week you will meet in Crop Science 121A.

COHORT 1	Schedule
Section 0101	Tuesday 11:30 am – 1:20pm
Section 0102	Tuesday 2:30 pm – 4:20pm
Section 0103	Monday 8:30 am – 10:20 am

COHORT 1	Schedule
Section 0104	Wednesday 3:30 pm – 5:20 pm
Section 0105	Friday 3:30 pm – 5:20 pm
Section 0111	Thursday 2:30 pm– 4:20 pm

COHORT 2	Schedule
Section 0106	Tuesday 11:30 am – 1:20 pm
Section 0107	Tuesday 2:30 pm – 4:20 pm
Section 0108	Monday 8:30 am – 10:20 am
Section 0109	Wednesday 3:30 pm – 5:20 pm
Section 0110	Friday 3:30 pm – 5:20 pm
Section 0112	Thursday 2:30 pm – 4:20 pm

Instructor Information

First half of the semester

Instructor Name: Dr. Barry Micallef

Instructor Email: bmicalle@uoguelph.ca

Office location and office hours: CRSC 424, by appointment

Second half of the semester

Instructor Name: Dr. Andy Robinson (Course Coordinator)

Instructor Email: andyr@uoguelph.ca

Office location and office hours: ANNU 122, by appointment

Instructor Name: Dr. Angela Canovas

Instructor Email: acanvas@uoguelph.ca

Office location and office hours: ANNU 125, by appointment

GTA Information

GTA Name: Alexandra Ficht, Sections 0102 and 0106

GTA Email: ficht@uoguelph.ca

GTA Name: Mariana Roedel Lopez Vieira Peixoto, Sections 0101 and 0107

GTA Email: mroedell@uoguelph.ca

GTA Name: Marguerite Mainprize, Sections 0104 and 0110

GTA Email: mmainpri@uoguelph.ca

GTA Name: Stephanie Lam, Sections 0105 and 0109
GTA Email: slam02@uoguelph.ca

GTA Name: Laura Manerus, Sections 0103 and 0112
GTA Email: lmanerus@uoguelph.ca

GTA Name: Alexandra Camara, Sections 0111 and 0108
GTA Email: acamara@uoguelph.ca

GTA Name: Nicholas Genova, Help TA
GTA Email: ngenova@uoguelph.ca

Course Content

Specific Learning Outcomes:

Through this course students will be able to:

1. Demonstrate an understanding of the diversity and complexity of plant and animal genetics.
2. Demonstrate an understanding of methods of genetic analysis for plants and animals.
3. Demonstrate the ability to synthesize the current state of knowledge regarding the mechanisms of genetic variation in plants and animals.
4. Demonstrate an ability to model the transmission of qualitative and quantitative variation in plant and animal phenotypes.

Lecture Content:

Lecture content information will be posted on CourseLink throughout the semester. The proposed topics covered throughout the semester are presented below:

Week	Topic
1	Introduction, Plant and Animal Life Cycles
2	Modes of Reproduction and Sex Chromosomes
3	Transmission Genetics, Extensions to Mendelism
4	Extensions to Mendelism-Continued, Recombination & Linkage
5	Thanksgiving, Genome Structure
6	Reverse and Forward Genetics
7	Population Genetics, Hardy-Weinberg Equilibrium, Migration
8	Single Locus Selection, Quantitative Traits
9	Quantitative Trait Selection
10	Genetic Diversity, Predicting Genotypes
11	Signatures of Selection, Quantitative Trait Loci
12	Wrap-up and Review

Labs:

Labs are two hours each week per section. There are five lab activities throughout the semester, each one spanning two weeks. The first lab activity involves a tour of the U of G Arboretum and the cataloging of various plant and animal species to explore the amount of genetic variation in the natural world. For lab activities two to five, the first week is devoted to an activity that will generate data or information required for the second week where the data will be analyzed. Details of the activities, requirements and deadlines for each lab assignment are posted on CourseLink because the scheduling is defined by the section in which you are registered. Note that the lab sections are broken up into two cohorts. Cohort # 1 begins the lab activities the week of September 11 and Cohort # 2 begins the lab activities the week of September 18. and the lab schedule unfolds as follows:

Week	Cohort # 1	Cohort # 2
September 11	Lab 1 Arboretum Tour	No lab scheduled
September 18	Lab 1 Catalogue species in Arboretum	Lab 1 Arboretum Tour
September 25	Lab 2 Data Collection	Lab 1 Catalogue species in Arboretum
October 2	Lab 2 Data Analysis	Lab 2 Data Collection
October 9	Thanksgiving – no labs scheduled	
October 16	Lab 3 Data Collection	Lab 2 Data Analysis
October 23	Lab 3 Data Analysis	Lab 3 Data Collection
October 30	Lab 4 Data Collection	Lab 3 Data Analysis
November 6	Lab 4 Data Analysis	Lab 4 Data Collection
November 13	Lab 5 Data Collection	Lab 4 Data Analysis
November 20	Lab 5 Data Analysis	Lab 5 Data Collection
November 27	No lab scheduled	Lab 5 Data Analysis*

* Note that due to the short week for the Fall Study Break and the re-arranging of the days in the last week of class, Sections 0110 and 0112 will have special arrangements to complete Lab 5.

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Labs (5 @ 6% each)	See CourseLink	30	All
Midterm	October 21, 15:30-17:30 ROZH 104	35	All

Final examination date and time:

Thursday December 7, 2017 11:30 am - 1:30 pm

Final exam weighting:

35%

Course Resources

Required Texts:

“Genetic Analysis – An Integrated Approach” 2nd Custom Edition by Saunders and Bowman (ISBN 978-1-323-47021-3)

Other Resources:

Please note that different versions of the textbook are available in hardcover or softcover and including or excluding the online learning material provided by the publisher. If you are interested in additional practice material, you have the option of the online learning material or there is also a Student Handbook and Solutions manual available. None of the additional material is required but if you feel it will help your learning, it is available.

Extensive use is made of Courselink. Check Courselink for the individual schedule and deadlines for the lab activities for your section since each lab section meets at different times and therefore will have different schedules and deadlines.

Field Trips:

Both parts of Lab 1 will explore the Arboretum on campus.

Course Policies**Grading Policies:**

There is a “no late” policy in this course. The Data Collection Forms have deadlines connected to the schedule of your lab section and the Data Analysis Quizzes have a very long deadline. All deadlines are posted in CourseLink. Due to the way these lab exercises are designed and the lab activities scheduled, late submissions cannot be accommodated. Assignments not submitted by the deadline will receive a grade of zero. In the event that a graded component cannot be completed, the University’s policies on academic consideration (see below) govern how missed lab assignment components will be handled.

Course Policy on Group Work:

Students will be encouraged to work in groups in the lab and the lab assignment has space to enter the names of the student collaborators that made up the group who worked together on the lab exercise. However, each student must submit an individual assignment that will be individually graded.

Course Policy on Technology:

The vast majority students are using their own technology such as smartphones, laptops and tablets in class as well as for the University of Guelph’s online Learning Management System (aka CourseLink). In this course it is 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 regardless of technological issues you may encounter. There are many places on campus or out in the world-at-large where computers may be accessed or signed out if your own technology is non-functional. 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 class, you are welcome to use technology to 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 in the classroom and in the lab. 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.

http://www.uoguelph.ca/cio/sites/uoguelph.ca.cio/files/CIO-ITSecurity-03.1.3-AUP-Approved_0.pdf

Course Policy on E-Mail:

The instruction team for this course is involved with other courses as well, just as you are. Email is used as an important source of updates about this course. All official email from the instruction team will be sent to your University email account (@uoguelph.ca). It is expected that you are checking this email account on a frequent basis. If you email the course instruction team, please keep in mind that with over 400 students in this course and lots of students in their other courses, the instructors receive a lot of email in a day. In order to facilitate an answer to your email, please consider the following guidelines:

- correspond with the instruction team using your official University email only (@uoguelph.ca), emails from other addresses could be screened as spam
- if the answer to your email query can be found in the course outline or other material posted on the MBG-2400 CourseLink site, you might not receive a reply
- include the course code (MBG-2400) and your section number (01xx) in the subject along with a few relevant key words indicating what your message is about
- include your full name and student number in the email signature
- allow 24 to 48 hours for a response to your query
- address your email appropriately, for example send questions of academic consideration and course housekeeping to Andy (andyr@uoguelph.ca)

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the individual instructor for that class. When recordings are permitted, they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor. If the instructor provides a recording of the lecture (aka "podcast"), these recordings are also solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor. Please note that if provided, podcasts are an optional additional tool for assisting with your learning and there is no guarantee a podcast will be available for every lecture.

University Policies

Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in [Section VIII \(Undergraduate Degree Regulations and Procedures\) of the Undergraduate Calendar](#).

Academic Misconduct:

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.

Detailed information regarding the Academic Misconduct policy is available in [Section VIII \(Undergraduate Degree Regulations and Procedures\) of the Undergraduate Calendar](#).

Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the

University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the [Student Accessibility Services website \(http://www.uoguelph.ca/csd/\)](http://www.uoguelph.ca/csd/).

Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the [Course and Instructor Evaluation Website](#) for more information.

Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day of the current semester (the last date to drop a single semester courses without academic penalty) which is listed in [Section III \(Schedule of Dates\) of the Undergraduate Calendar](#).

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in [Section VIII \(Undergraduate Degree Regulations and Procedures\) of the Undergraduate Calendar](#).