

advanced genetics

Instructor: **David Smith** | BGS 3028 | office hours (in-person): THU 12:00-1:00 | dsmit242@uwo.ca

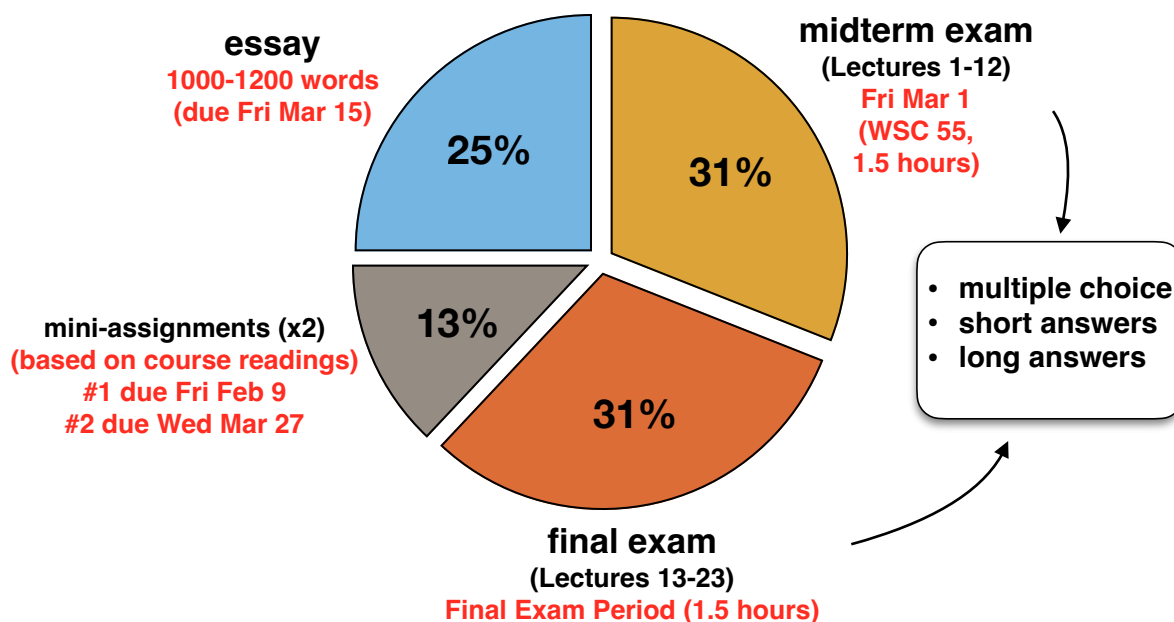
TA: **John Wesley Robinson** | email: jrobi8@uwo.ca

About the class: The fields of genetics and genomics are becoming more and more important and integral to science, health, and public life. Dramatic leaps forward in DNA sequencing technologies and bioinformatics have brought the power of genomics to the scientific masses, and society as a whole. In turn, genetic research is progressing at a startling pace, raising hopes for improvements in quality of life as well as bringing ethical and environmental concerns. This course focuses on the changing landscape of advanced genetic research, with a focus on genomics, bioinformatics, molecular evolution, and the underlying motives driving scientists. Through lectures, workshops, discussions, and visiting experts, we will try to put our fingers on the ever-changing pulse of contemporary genetics.

Text: All materials will be provided online via OWL.

Course website: OWL (<http://owl.uwo.ca>) will be the central location for materials relating to 3595B.

Evaluation:



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ASSIGNMENTS & GRADING

1. Mini-assignments / engagement.

There are two small assignments in this course: “**Mini-assignment 1 - peer review**” and “**Mini-assignment 2 - personal reflection on Junk DNA**”. The peer review assignment is due on **Fri Feb 9 (11:55 pm EST)** (please upload to OWL via the assignment section). The personal reflection piece is due on **Wed Mar 27 (11:55 pm EST)** (again, upload to OWL via the assignment section). The instructions for these two assignments, which together represent **13% of the course** (6.5% each), will be provided in class and on OWL (via the assignment section).

2. Essay Assignment.

A detailed description and summary of this assignment will be provided during the Writing in Genetics lecture on Fri Jan 21. **Point-by-point instructions are posted on OWL** (see the “Essay Instructions” tab; they are also found in the assignment section).

The inspiration for this assignment came from the journal *Evolution* (<https://onlinelibrary.wiley.com/journal/15585646>), a top-tier academic publication, focusing on evolutionary genetics. In January 2017, *Evolution* started publishing “Digests” (<https://sites.duke.edu/evodigests/>), which are short, editorially reviewed essays highlighting specific research papers in the journal. Digests serve “to improve the accessibility of research published in *Evolution* to biologists outside of the original article’s subfield of specialization.” They are typically written by graduate students (as opposed to PIs) and are formally published in the journal and indexed in PubMed. In short, they are an excellent avenue for students and aspiring scientists to publish in a major journal.

For the Biology 3595B essay assignment, I wanted to follow the same general format as a Digest for *Evolution*, with the hope of potentially inspiring students to get published in *Evolution* (or any other journal/magazine that publishes highlights); note previous students have had their digests published. The instruction for how to write a Digest can be found here: <https://sites.duke.edu/evodigests/writing-instructions/>. For the assignment, please follow the point-by-point instructions that I have posted on OWL. You are welcome to write your Digest on one the available articles listed in *Evolution* (<https://sites.duke.edu/evodigests/accepted-articles/>), provided it deals with a topic in genetics. You can also choose to write a Digest on a genetics article from another peer-reviewed journal, provided it was published in **2023 or later**. Be sure to clearly indicate the research article you are highlighting in the essay.

Grading: Each essay will be given a mark out of 25 based on style and grammar (5), scientific content (10), persuasiveness (5), and the figure or graphic component (5). **The essay represents 25% of the final grade.**

Due date: Completed essays must be uploaded to OWL (via the assignment section) by **Fri Mar 15 (11:55 pm EST)**. There will be a 10% deduction per day for late essays; no essays will be accepted after Fri Mar 22.

3. Midterm exam.

The midterm exam will be based on the material and readings covered in the lectures, including workshops and Q&A sessions, from **Jan 10 to Feb 16**. The exam will be a in-class/in-person test (1.5 hours) on ... The exam will include a mix of multiple-choice questions as well as short and long answer questions.

Grading: The midterm exam represents 31% of the final grade.

Make-up final exam: Date and time TBD.

4. Final exam.

The final exam will be based on the material and readings covered in the lectures, including workshops and Q&A sessions, from **Feb 28 to Apr 5**. The exam is a in-class/in-person (1.5 hour) test **during the final exam period (date and time TBD)**. The exam will include a mix of multiple-choice questions as well as short and long answer questions.

Grading: The final exam represents 31% of the final grade.

Make-up final exam: Date and time TBD.

TENTATIVE COURSE SCHEDULE (SUBJECT TO CHANGE)

(Note: the most up-to-date version is posted on OWL under the "Course Schedule" tab.)

ADDITIONAL STATEMENTS

1. Student absences: If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

a) *Assessments worth less than 10% of the overall course grade:*

Please reach out to the instructor within 24 hours of the missed assessment to discuss potential accommodations.

b) *Assessments worth 10% or more of the overall course grade:*

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible.

For further information, please consult the University's medical illness policy at:

https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf

The Student Medical Certificate is available at:

https://uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

2. Accommodation, accessibility & acknowledgments:

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at:

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf

EDI statement

The pronouns used by instructor are he/him. The pronouns used by the TA are (he/him).

Land acknowledgment

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous peoples (e.g., First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society.

3. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy, https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Some of the remote learning sessions for this course (if moved online during the semester) might be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Turnitin *aids* in identifying plagiarism. All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Western students are expected to follow the [Student Code of Conduct](#).

4. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at: https://www.uwo.ca/health/student_support/survivor_support/get-help.html. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

5. Equity, Diversity, Inclusion and Decolonization (EDID)

Land Acknowledgement: We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak, and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous peoples (First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society. Throughout Canada, North America, and the world, Indigenous Peoples are vital contributors to their communities, and we greatly value their presence, knowledge, and wisdom.