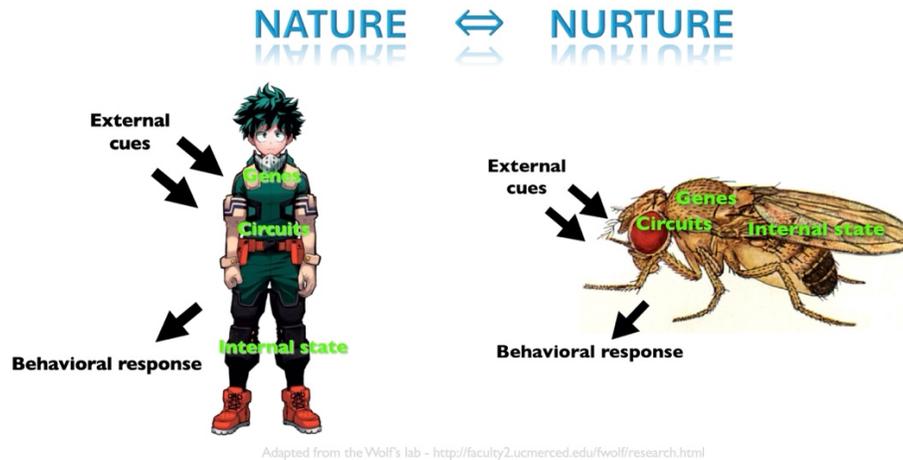


## Biology 3598A – Behavioural genetics – Fall 2024

### Course Outline

---



**Welcome to Bio3598! My goal is to help you learn and be successful!**

**Please, read and keep this course outline handy, because it is an official document that contains important course information.**

---

## 1. Course Information

### List of Prerequisites: Biology 2581 – Genetics

Unless you have either the prerequisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Advisors) to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

## 2. Instructors Information

Instructors	Email	Office	Office Hours
Dr. Anne F Simon (Course Coordinator)	<a href="mailto:asimon28@uwo.ca">asimon28@uwo.ca</a>	BGS 3022	W 10:30 & by appointment
Abigail Bechard (Teaching Assistant)	n/a	n/a	n/a

Students must use their Western ([@uwo.ca](mailto:@uwo.ca)) email addresses and include Bio3598 in the subject line when contacting their instructors. Messages from a non-Western account or those that do not include Bio3598 may be blocked by the university's anti-spam system.

**Email Policies:** emails are checked 9:30 am to 4:30 pm most days, except weekends and holidays. Answered within 24 hrs, with the limitations below:

To maximize efficiency and to allow your instructor and TA to respond to legitimate concerns as quickly as possible, emails of the following nature will **not** be responded to:

- Questions about course material or on how to prepare for quizzes, exams, or annotation. Such questions should be taken to the tutorial or office hours, or posted on the Discussion lists on Brightspace (<https://westernu.brightspace.com/d2l/le/27452/discussions/List>).
- Questions that can be answered based on the information found in this course outline. Being able to find information yourself is an important soft-skill and an employability outcome (such as requests for extra assignments, make-up exams, etc....)
- Please do not hesitate to contact the TA or the instructor if you have any constructive comments or feedback on any aspect of Bio3598. We are always trying to improve the course!

## 3. Course Syllabus, Schedule, Delivery Mode

The roles of genes and genetic variation in the evolution and expression of animal behaviour are examined. Major themes include the population genetics and quantitative genetics of behaviour, the molecular biology of gene discovery, and the evolution of behavioural traits, including social traits, as studied through vertebrate and invertebrate model systems.

The schedule for lecture and tutorial can be found on the last page.

	Lectures	Tutorials annotation	Studying lectures = readings, quiz + exam preparation	Total per week (minimum)
Per average week	2	1	5	8

## LEARNING EXPECTATIONS

Course Objectives	Specific Learning Outcomes Students will:	Assessment Method
Provide breadth of knowledge of basic principles and concepts	Master a wide range of basic concepts in behavioural genetics	Paper annotations and quizzes
Provide depth within specialized areas	Acquire in depth understanding and advanced knowledge of a range of specialized areas in behavioural genetics and obtain detailed understanding of: <ul style="list-style-type: none"> <li>the methods used to determine the extent of the role of genetics in behaviour</li> <li>how behaviour is controlled both by environment and genetics</li> <li>Including notions of neurobiology and epigenetics</li> </ul>	Quizzes, mid-term and finals
Provide an understanding of experimental design and methodology	Become familiar with the experimental approaches of selected topics in behavioural genetics	Quizzes, paper annotations mid-term and finals
Develop approaches for integration of contemporary information	Describe examples of studies demonstrating the relevance of behavioural genetics to understand human disorders	Quizzes, paper annotations mid-term and finals
Encourage critical thinking and hypothesis building	Determine how specific experimental findings support basic concepts as well as considering alternative interpretations of the findings	In-class exercises, paper annotations mid-term, final
Provide opportunities to develop communication skills	Develop skills in reading scientific literature Develop research skills through the use of research journals	Paper annotations and short answers in quizzes, mid-term and final

## 4. Course Materials

### TEXTBOOK

Strongly recommended - Plomin et al. (2012) Behavioral Genetics, 7<sup>th</sup> Ed (or prior editions)

ISBN-10: 1-4641-7605-1, ISBN-13: 978-1-4641-7605-0

You can order either a hardcopy or an eBook at the Western bookstore [using this link](#).

Should you buy the book? Yes. Lectures as well as exam questions draw a lot from the text. That said, about half of the course material is imported from elsewhere, so just reading the text is not always enough.

### COURSE WEBSITE:

<https://westernu.brightspace.com/d2l/home/27452>

Most lectures will be supplemented by readings from the primary literature. PDFs of these will be posted on OWL and updated weekly. Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/d2l/home/27452>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

We use Personal Response Systems (iClickers), through your cell phones or electronic devices.

If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

### TECHNICAL REQUIREMENTS

You will need a stable internet connection and a cell phone or other electronic device for both the lecture and tutorials.

## TEACHING METHODS:

### 1. Text reading

Prior to attending class, from textbooks or the web, as indicated on schedule (see last page). **Review the content of Bio2581 and the Genetics form 1<sup>st</sup> year, as it is assumed to be acquired.**

This course is challenging and fast paced. To be successful, you must attend all lectures and read the assigned material BEFORE and AFTER each lecture. Do not fall behind! If after the lecture and after you study, you do not understand something, please first consult the Discussion lists on Brightspace (<https://westernu.brightspace.com/d2l/le/27452/discussions/List>), where your question might have already been addressed, or see the instructor during office hours or by appointment for clarification. To avoid unnecessary meetings with me, however, I recommend you come to every class.

### 2. Class lectures, participation, discussions, and group work

Slides will be posted prior to lectures on OWL Brightspace. Your in-class engagement and overall behaviour also count toward that grade. Please note that there is a correlation between participation and final grades. **Participation (5%)**

### 3. Tutorial

The goals of the tutorials will be to understand recent progress in research, through the discussion of primary literature results presented in lecture, and discussion of quizzes and mid-term. Mostly **Group work (with peer evaluation accounted for)**.

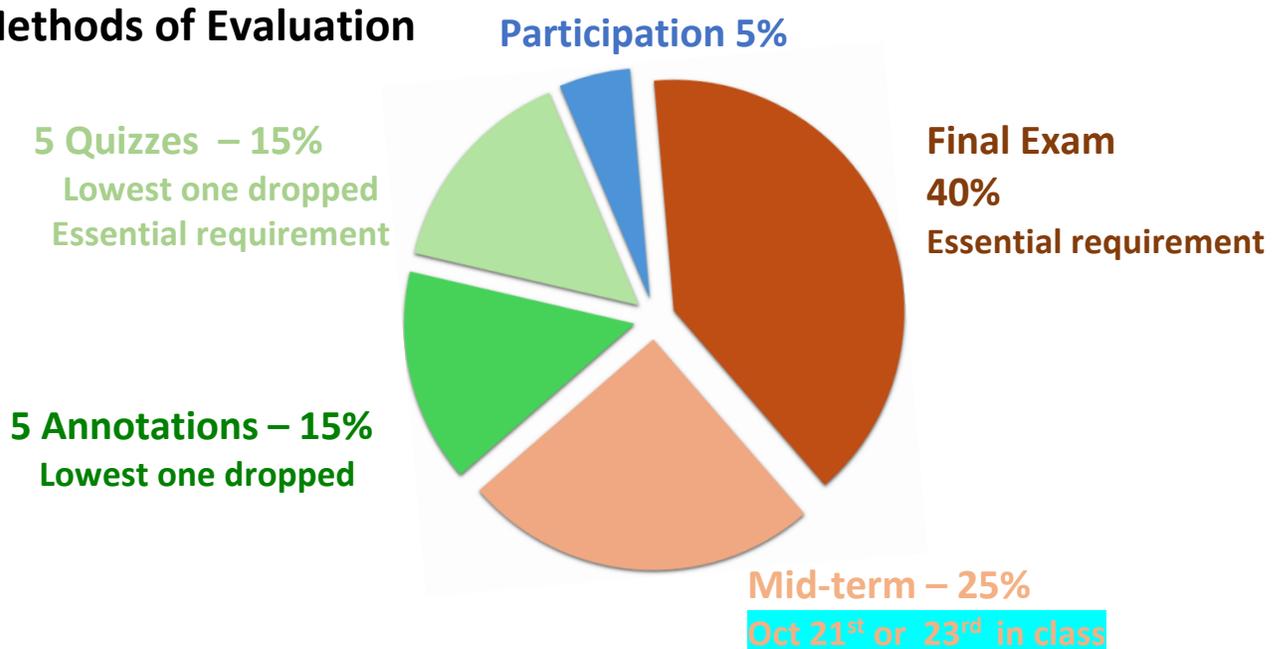
**5 Quizzes (15%):** lowest grade will be dropped. **You must do 4/5 quizzes to pass the course.**

**5 Exploration table (5%)** lowest grade will be dropped

**5 Annotation (10%):** lowest grade will be dropped.

**Students who decide to leave the tutorial prior to its end, also choose to receive only 50% of the grade of that day's evaluation (quiz or annotation).**

## 4. Methods of Evaluation



- ☒ Rubrics will be used to evaluate assessments and will be posted with the instructions
- ☒ After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

**Participation (5%):**

- 2.5%: In-class: starts at 100% assumes respectful behaviour, both in lecture and tutorials
- 2.5%: **attendance** evaluated through participation to in-class survey questions

GRADING SCHEME PARTICIPATION	Grade
<b>Attendance to 100-80% of the lectures and tutorials</b>	100% attendance evaluation
<b>80-60%</b>	70%
<b>60-50%</b>	50%
<b>Less than 50%</b>	0%

**Exploration table (5%):** Answers the following questions presented through in-class survey questions about what was learned in lectures (iClicker)

- What do you want to know more about;
- What questions do you still have / muddiest point,
- Questions about the past graded quizzes

GRADING SCHEME EXPLORATION TABLE	Grade
<b>Relevant to the week's or last graded quizzes' content.</b>	2
<b>Not relevant to the week's or last graded quizzes' content.</b>	1
<b>Absent</b>	0

**Annotation (10%):** Group work: Manuscript only presented during tutorial – work as a group, but fill in last 2 questions as an individual (on paper)

GRADING SCHEME ANNOTATION	Grade
<b>well written answer, that is easily understood on the first read through (i.e., I don't have to read it more than once that is relevant to the week's questions and does not contain any inaccurate information.</b>	3
<b>a well written answer, that is easily understood on the first read through but not fully relevant to the week's questions, and/or has some minor errors.</b>	2
<b>an answer with some confusing wording, that takes more than one reading to determine meaning.</b>	Or 2
<b>an answer that shows you are starting to connect relevant concepts together, even if the answer is wrong.</b>	1
<b>one word answers, or answers that show no thought process, or blank answers.</b>	0
<b>bonus of 1 point if ALL others consider that you contributed</b>	<b>+1</b>

**Quizzes (15%):** Every other week, 10-15 min-long quiz (for a total of 5 quizzes), in the format of multiple choices and/or short answers – lowest grade will be dropped. Each quiz will cover what has been done in lecture since the prior quiz or exam. **You must do 4/5 quizzes to pass the course.**

### **Mid-term (25%), Final (40%):**

Mid-term and Final format: **cumulative** multiple choice (25%) and short answers (75%), with **hand-written** cheat-sheet (one sided 11' X 8' page similar to the page on which this syllabus is printed, with the student's name, to be handed along with the exam).

The final exam will be scheduled by the registrar during the regular exam period. It will be cumulative, covering material from the entire year. **You must obtain a passing grade at the final exam to pass the course, to ensure that you demonstrate sufficient mastery of the learning outcomes**

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

## 6. Student Absences

- **General information about missed coursework**

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/academic\\_consideration\\_Sep24.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf),

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

[https://registrar.uwo.ca/academics/academic\\_considerations/](https://registrar.uwo.ca/academics/academic_considerations/)

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Examinations scheduled during official examination periods (Defined by policy)

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

- **Evaluation Scheme for Missed Assessments**

- **Quizzes:** As your mark is based on the average of all the quizzes with the lowest grade dropped, no make-up quiz will be given. An absence (excused or not) is an automatic 0, and there will be no exceptions. **At least 4 of the 5 quizzes must be attempted to pass the class**, to ensure that students demonstrate sufficient mastery of knowledge to progress.
- **Students who decide to leave the tutorial prior to its end, also choose to receive only 50% of the grade of that day's evaluation.**
- **There will be one make-up mid-term.** It will take place during finals week, at the end of the semester. Alternatively, you can choose to have your mid-term grade reweighted to your final grade.
- **Absences from Final Examinations.** When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

- **Essential Learning Requirements**

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

- 4 out of 5 quizzes submitted
- a minimum grade of 50 on the final exam

- **Coursework with Assessment Flexibility**

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

- **Quizzes.** This course has 5 quizzes, and the 4 quizzes with the highest marks are counted towards your final grade. Should extenuating circumstances arise, students do not need to request Academic Consideration for the missed quiz. Academic consideration requests will be denied for the missed quiz. **Academic Consideration requests may be granted when students miss more than 2 quizzes, and these additional (3<sup>rd</sup>, 4<sup>th</sup>...) missed quizzes will be reweighted to the final exam.**
- **Annotations.** This course has 5 annotations, and the 4 annotations with the highest marks are counted towards your final grade. Should extenuating circumstances arise, students do not need to request Academic Consideration for the missed annotation. Academic consideration requests will be denied for the missed annotation. **Academic Consideration requests may be granted when students miss more than 2 annotations, and these additional (3<sup>rd</sup>, 4<sup>th</sup>...) missed annotation will be reweighted to the final exam.**
- **Exploration Tables.** This course has 5 exploration tables, and the 4 exploration tables with the highest marks are counted towards your final grade. Should extenuating circumstances arise, students do not need to request Academic Consideration for the missed exploration table. Academic consideration requests will be denied for the missed exploration table. **Academic Consideration requests may be granted when students miss more than 2 exploration tables, and these additional (3<sup>rd</sup>, 4<sup>th</sup>...) missed exploration tables will be reweighted to the final exam.**

## 7. EDI statement

The pronouns used by Dr. Anne F Simon are she/her/elle and by Abigail Bechard are she/her.

## 8. 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.

Other wording can be found here: <https://indigenous.uwo.ca/initiatives/land-acknowledgement.html>

## 9. Accommodation and Accessibility

### Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays: <https://www.edi.uwo.ca>.

### 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\\_Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

### Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](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 their official university address is attended to in a timely manner.

**STATEMENT ON THE USE OF ELECTRONIC DEVICES:**

No electronic devices (including but not limited to laptop computers, cell phones, iPods, etc...) will be allowed during examinations.

**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:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

**iClickers will be used for evaluation.**

iClickers will be used in lecture to assess attendance that counts toward the participation grade, as such they cannot be used by anyone but the student.

**Support Services**

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping 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](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](mailto:support@uwo.ca).

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.

## **GRADE APPEAL**

**Marks will be posted regularly to the class OWL website.**

All appeals must be submitted in writing to the instructor within two weeks of the mark posting with a clear explanation of the reason for the appeal. Exams written in pencil may not be appealed. The instructor may re-grade all or part of the exam to look for additional errors which may lower or raise the final mark.

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

## **PROFESSIONALISM & PRIVACY:**

Western students are expected to follow the Student Code of Conduct. Additionally, the following expectations and professional conduct apply to this course:

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments

## ANTICIPATED LECTURE TOPICS

UNITS	Lecture Topic
Intro + Genetics	Introduction Mendelian genetics and exceptions What is Behavioural Genetics?
Are genes Involved?	Evidence from Animal Models and Human Studies: Genes and the domestication syndrome Twin and adoption studies
How much are genes involved?	Interplay between genes and environment: Heritability <b>Invited speaker: Dr. David Coltman "Heritability"</b> Interplay between genes and environment: Environmentality
Identifying Genes	<b>Mid-term: Wednesday Oct 21<sup>th</sup></b> <b>Invited speaker: Abigail Bechara "Investigating shared molecular mechanisms underlying ASDs, ADHD, sleep disorders, and behaviour"</b>
	Linking Genes to Behaviour QTL - GWAS
From Genes to behaviour	<b>Invited speaker: Dr. Kohalmi "Plant behaviour"</b> Pathways between genes and behaviour
The social Brain	Example of evolutionary conserved behaviour: Social behaviour <b>Invited speaker: Dr. Arvid Agren "Evolution of social behaviour"</b>

Lectures will also feature speakers from academia. These visiting speakers will present a short segment of their work and how it relates to Behavioural Genetics. **Their talk will also be subject of exam questions.**

**Important note:** In all of the topics, the primary focus is on the **understanding of the concepts**. Please try to garner a thorough, in-depth understanding of the material, because that is what allows success in biology. Accordingly **tests and exams will be designed to evaluate your comprehension** of the material and your ability to apply it to new and different scenarios, **and not simply your ability to regurgitate** memorized facts.