

Department of Biology

Biology 4562a Genes and Genomes 2025

COURSE INFORMATION

The first lecture will be held on

Prerequisites: Completion of at least 1.5 Biology courses at the 3000 level or above; and registration in year 4 of an Honors Specialization module or a Major in Genetics offered through the Department of Biology; or permission of the instructor.

Unless you have either the prerequisites for this course or written special permission from the Department of Biology to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

COURSE CONTACT INFORMATION

Instructor: Dr. Susanne Kohalmi Office: WSC319

Office Hours: make an appointment by email: skohalmi@uwo.ca

Office hours will be held in person unless zoom is required.

Students must use their Western (@uwo.ca) email addresses when contacting their instructors and place the course number into the header. Please give some options for possible meeting times which fit into your schedule.

COURSE SYLLABUS

- This is a lecture-based course with 2 hours of lecture/week.
- This course has no assigned textbook. Required reading material will be available online. Please check BrightSpace on a regular basis for news and updates:
(<https://westernu.brightspace.com>)
- The lecture will cover a broad range of topics on plant and organelle genetics. Lecture material will be available through BrightSpace:
 - (1) Introduction
 - (2) Genome structures (nuclear versus organelle)
 - (3) Replication and transcription of organelle genomes
 - (4) Organelle division
 - (5) Organelle inheritance
 - (6) Plant genetics and development (DNA transfer, Transformation strategies, Forward versus reverse genetic approaches, Analysis and use of transgenic plants)
 - (7) Autocatalytic introns
 - (8) RNA editing

(9) Protein import into organelles
Additional topics which will be covered time permitting.

SCHEDULE and MODE of DELIVERY

In person. Monday and Wednesday from 11:30 till 12:30

Classes begin: September 4, 2025

Fall Reading Week: November 3 – 9, 2025

Classes end: December 9, 2025

Exam period: December 11 – 22, 2025

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

GENERAL DESCRIPTION OF LEARNING EXPECTATIONS

- Learn about genetic concepts and approaches of genetic techniques and how they are used for problem solving
- Have an understanding of similarities and differences of nuclear versus organellar genome structures
- Regulation and molecular concepts of organellar processes and mechanism
- Appreciate plants a bit more 😊

COURSE MATERIAL

All course material will be posted on Brightspace <https://westernu.brightspace.com/>. Any changes will be indicated on the website and discussed with the class. Lecture material and reading material will be posted prior to class time. The class is not recorded.

This is a list of recommended optional textbooks in case of need (available through library):

General: Lewin: Genes

Lodish et al.: Molecular Cell Biology

Organelles: Gillham: Organelle Genes and Genomes

Hopkins: Introduction to Plant Physiology

Plant Molecular Biology: Hughes: Plant Molecular Genetics

Howell: Molecular Genetics of Plant Development

Westhoff: Molecular Plant Development: from Gene to Plant

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

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.

PARTICIPATION AND ENGAGEMENT

Students are expected to participate and engage with content as much as possible.

IMPORTANT DATES

Final exam: TBA

Midterm exam: planned for

METHODS OF EVALUATION

Final exam: 55%

Midterm exam: 35%

Assignments (2): each 5%

Essential Learning Requirements:

You must pass at least one exam and submit one assignment on time to pass this course.

Exam format: short answer questions.

Assignments: You will have one week for finishing an assignment. Each assignment is worth 5% of the final grade. If you submit all assignments on time, you will receive an extra 1%. Late submissions will be marked to provide feedback but will not be graded. You will have a 2-day grace period and then the percentages will be moved to the next exam. Details on the assignments (due dates, content, format etc.) will be provided through the course website. Assignments have to be submitted as paper copy (or in case of online teaching by email) **AND** through turnitin.com. Submission is only complete if **BOTH**, hardcopy and turnitin copy are on time! Submissions might be graded using Gradescope. Use of AI tools (e.g., ChatGPT, Copilot, Gemini etc) are not recommended as questions similar to the ones in the assignments may be part of an exam. For this reason, the use of generative AI tools, to generate ideas, the reports and the thesis are not allowed. A goal of this course is to introduce you to scientific writing. The best policy is to learn and structure your own writing. It is important that you learn how to access current literature and to generate novel and creative projects. Those tools, however are permitted to get feedback on clarity of your writing, spelling, or bounce ideas of it - but make sure that you are communicating your own ideas. A note must be added to all of your written submissions to acknowledge and describe how generative AI was used in the preparation. If you are in doubt as to what would be an ethical usage of Generative AI, please, complete the tutorial below.

<https://teaching.uwo.ca/teaching/assessing/academic-integrity.html>.

Instructors might use generative AI (Co-pilot) to assist with grading

- Missed midterms and final exams require accommodation.
- One make-up test for the midterm will be offered OR the weight of a missed midterm will be transferred to the final. In the latter case both missed midterm and make-up will need accommodation.
- One make-up test for the final will be offered. If a make-up assessment for the final exam is missed, the student will receive an INC and can complete the task the next time the course is offered. In the latter case both, missed final and make-up will need accommodation.
- Exams are planned to be in person. IF exams are held online, virtual proctoring might be used.
- All assignments are due at 5 pm EST unless specified otherwise. Students are expected to submit each of the assignments on time. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to 48 hrs past the deadline without a late penalty. Should students submit their assessment beyond 48 hrs past the deadline the percentages will be moved to the next exam. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (48 hrs). You will receive an extra 1% if both assignments are on time.
- Written assignments will be submitted to Turnitin (statement in policies below).
- Students will have one submission to Turnitin.
- 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.
- Marks will not be “rounded” or “curved”. Your grade is your grade.

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,

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/

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)

- Midterm (Designated by the instructor as the one assessment that always requires documentation when requesting Academic Consideration)

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.

Missed requirements

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean's Office/Academic Counselling unit of your Home Faculty. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's policy on academic consideration for student absences:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absence_s.pdf.

Absences from Final Examinations: If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

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

ADDITIONAL INFORMATION

How to contact your instructor

I encourage you to make appointments with me for questions and/or comments. Appointments can be requested by email, please give me a few of your preferred time options. Questions can also be asked immediately after class. Please do not leave me phone messages.

Email Policies

Email hours: I usually check my email once a day, except for weekends and holidays. I try to answer within 24 hrs, with the following limitations:

Emails of the following nature will *not* be responded to:

1. Questions about course material. Such questions should be taken to the lecture or you can set up

- an appointment. Questions are typically answered far better and quicker “in person”.
2. 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.
 3. To discuss grades or make-up exams, please make an appointment.
 4. If you email your instructor, you must use your Western email address and include *Biol4562* in the subject line. Messages from a non-Western account or those that do not include *Biol4562* may be blocked by the university’s anti-spam system.
 5. Emails from non-UWO addresses or without *Biol4562* in the subject line **will be deleted**, as will emails that are impolite or written in the form of a text message.

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).

General 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,

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.

No electronic devices are permitted during exams.

Requests for Relief (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:

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

Procedures on Request for Relief from Academic Decision (Undergraduate):

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

Procedures on Request for Relief from Academic Decision (Graduate):

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

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:

Policy on Scholastic Offences:
https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):

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

Procedures on Scholastic Offences (Graduate):

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

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

Turnitin. 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>).

Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

Remote Proctoring Software may be used in this course, including in the event of health lock-down. Tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

Professionalism & Privacy:

- Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:
- Students are expected to follow online etiquette expectations provided on OWL.
- 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.

Online Etiquette (if required)

Some components of this course might involve online interactions depending on COVID. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- “arrive” to class on time
- use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- to minimize background noise, mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- In order to give us optimum bandwidth and web quality, turn off your video camera after the lecture starts unless you are invited to speak or if requested otherwise
- please be prepared to turn your video camera off at the instructor's request if the internet connection becomes unstable
- unless invited by your instructor, do not share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- If you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question.
- Please remember to unmute your microphone and turn on your video camera before speaking.
- Self-identify when speaking.
- Please remember to mute your mic and turn off your video camera after speaking (unless directed otherwise).

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.

- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Use proper grammar and spelling. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

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.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

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/>.

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.

More information about Indigenous Services (<https://indigenous.uwo.ca/>) and this Land Acknowledgement (<https://communications.uwo.ca/comms/land-acknowledgement/>) are available.