

Biology 3597 Course Outline

1. Course Information

Course Information

Biology 3597A (Regulation of Gene Expression) – Fall 2025

Lecture content is asynchronous through Brightspace.

Tutorials will be offered in-person (please bring a laptop or other device to participate in iclicker polling and OWL Quiz). There will be no synchronous Zoom of the tutorial; it is in-person only. Material presented in the tutorials may be tested on the Quiz along with the lecture material.

Quizzes will be held during tutorial on Tuesdays.

List of Prerequisites

Biology 2280A and Biology 2581B

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for this course or written special permission from the Department of Biology to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record.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.

2. Instructor Information

Instructors	Email	Office	Office Hours
Dr. Patrick McDonald	pmcdona5@uwo.ca		Fri. 9:00 am
TA - Justin To	jto55@uwo.ca		
TA – Micah Evans	mevans95@uwo.ca		

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

Office hours will be held in person.

3. Course Syllabus, Schedule, Delivery Mode

A discussion of the genetic material and molecular mechanisms governing its expression in a variety of organisms.

Course learning outcomes:

- Apply the knowledge and experimental analyses on the multiple levels of the regulation of gene expression learned in lecture to novel examples.
- Read key papers and identify the key observations that support the genetic model of the regulation of gene expression proposed.
- Present an audio/visual discussion of a topic in the regulation of gene expression.

Tentative Schedule

Date	Content
Sep. 1	No lectures
Wk. 1 - Sep. 8 (lectures)	Gene expression and rearrangement
Tut 1 - Sep.9	<i>Course Introduction</i>
Wk. 2 - Sep. 15 (lectures)	Transcriptomics
Tut 2 - Sep. 16	<i>Grammar of gene expression – RNA seq (Quiz 1)</i>
Wk. 3 - Sep. 22 (lectures)	The <i>lac</i> operon
Tut 3 - Sep. 23	<i>Lac operon (Quiz 2)</i>
Wk. 4 - Sep. 29 (lectures)	Lysis vs lysogeny, occupancy, and information theory
Tut - Sep. 30	NDTR
Wk. 5 - Oct. 6 (lectures)	Genome occupancy
Tut 4 - Oct. 7	Test 1
Wk. 6 - Oct. 13 (lectures)	Transcription factor organization, regulation and anti-termination
Tut 5 - Oct. 14	<i>Course assignment expectations (Quiz 3)</i>
Wk. 7 - Oct. 20 (lectures)	Epigenetics
Tut 6 - Oct. 21	<i>DNA binding domain for occupancy (Quiz 4)</i>
Wk. 8 - Oct. 27 (lectures)	Regulation of splicing
Tut 7 – Oct. 28	<i>Bivalent chromatin (Quiz 5)</i>
Nov. 3	Reading week
Wk. 9 - Nov. 10 (lectures)	Regulation of Translation
Tut 8 - Nov. 11	Test 2
Wk. 10 - Nov. 17 (lectures)	Micro RNAs and RNA epigenetic
Tut 9 - Nov. 18	<i>Translational control of GCN4 (Quiz 6)</i>
Wk. 11 - Nov. 24 (lectures)	Regulation of mRNA stability and localization
Tut 10 - Nov. 25	<i>Horizontal transfer of memory (Quiz 7)</i>
Wk. 12 - Dec. 1 (lectures)	Cis-ome
Tut 11 - Dec. 2	<i>Cis-ome (Quiz 8)</i>
Wk. 13 - Dec. 8	No lectures
Tut 12 – Dec. 9	<i>Q/A before exam</i>

Classes begin: September 4, 2025

Fall Reading Week: November 3 – 9, 2025

Classes end: December 9, 2025

Exam period: December 11 – 22, 2025

4. Course Materials

Technical requirements

- Stable internet connection.
- Internet connection of a high enough speed in order to participate via Zoom, Mentimeter or iClicker and download course material.
- Computer with working microphone and webcam.
- Software to make a video presentation.
- For the tutorials, students should have a device that they can use to engage with the iclicker questions and Brightspace quizzes.

All course material will be posted to OWL: <https://westernu.brightspace.com/>

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.

5. Methods of Evaluation

Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

Quizzes (6 of 8)	16%	In tutorial (on schedule)
Test 1	20%	Oct. 7 (in tutorial)
Test 2	20%	Nov. 11 (in tutorial)
Article submission	4%	Due Oct. 25
Video Presentation	10%	Due Nov. 21
Final Exam	30%	Scheduled by registrar

To pass the course students must complete 76% of the assessments and must submit the video presentation. There are makeups for Test 1 and Test 2. There will be a makeup for the final.

Test 1 will cover content from weeks 1-4.

Test 2 will cover content from weeks 5-9.

The final exam will be cumulative.

Use of Generative AI Tools

AI tools are allowed for brainstorming/organization. AI tools are not permitted for the final production/writing of the article and video presentation.

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)

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

Students must complete 76% of the course assessments to pass. In addition, students must complete the video assignment to pass as that is a learning outcome. Non-completion of 76% of the assessments under any circumstances will result in failure of the course. In addition, there are make ups for Test 1 and 2.

If the scheduled makeup for Test 1 or 2 can not be met that portion of the grade will be allocated to the final exam. Students will not be allowed to write a makeup if they have already written the test or final.

Missed Quizzes

There are no makeups for missed quizzes. Quizzes will be scored best 6 of 8 to allow for the missing of a quiz.

Late submission of article or video

Late submission will result in a penalty of 10%/day following the grace period.

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.

Students must complete 76% of the course assessments to pass. In addition, students must complete the video assignment to pass as that is a learning outcome. Non-completion of 76% of the assessments under any circumstances will result in failure of the course. In addition, there are make ups for Test 1 and 2.

Coursework with Assessment Flexibility

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

Flexible Completion

Quizzes. This course has 8 quizzes, and the 6 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 first 2 missed quizzes. Academic consideration requests will be denied for the first 2 missed quizzes. Academic Consideration requests may be granted when students miss more than 2 quizzes, and these additional (3rd, 4th...) missed quizzes will be reweighted to the final exam.

Deadline with a No-Late-Penalty Period

Assignments. Students are expected to submit each of the assignments by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to (24 hours) past the deadline without a late penalty. Should students submit their assessment beyond (24 hours) past the deadline, a late penalty of 10% per day will be applied. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (24 hours).

6. Additional Statements

6.1 Religious Accommodation

When conflicts arise 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 of 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>

6.2 Academic 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.

6.3 General Academic Policies

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

Use of @uwo.ca email: 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 email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

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

6.4 Scholastic Offences

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

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.

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>).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Clickers will be used for audience response, not for evaluation.

6.5 Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, 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 (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced GBSV (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.

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. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

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/>.