Genome Biology
Biology (4515)
Course Outline/Syllabus Winter 2025

1. Course Information and Prerequisites:

Lectures: Check OWL for details

Labs: NA

List of Prerequisites: Prerequisite(s): 1.0 course from: Biology 3592A/B, Biology 3593A/B, Biology 3594A/B, Biology 3595A/B, Biology 3596A/B, Biology 3597A/B, Biology 3598A/B; and registration in Year 4 of an Honours Specialization module offered by the Department of Biology.

Prerequisites: Unless you have either the prerequisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) 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 if you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Professor	Email	Office	Phone	Office Hours
Miodrag Grbic	mgrbic@uwo.ca	WSC 342	519-661-2111 X 67776	12:30-13:30 Mo/Wed in person or zoom and/or other time on demand
GTAs:				

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

3. Course Description, Learning Outcomes, Schedule, Delivery Mode

Overview. The aim of this course is to present concepts, techniques and approaches that represent basis for modern genomics. We will focus on the power of genomic and whole genome sequencing as a tool to understand whole genome regulation, expression and interactions between different genomes and discuss experimental design in genomics. Students will be familiarized with genome sequencing strategies (ranging from Sanger to Illumina and long range sequencing using Oxford Nanopore systems), genome annotation and concepts and approaches used for the development of whole genome sequencing of the Two spotted spider mite *Tetranychus urticae*; http://www.jgi.doe.gov/sequencing/why/50028.html as well as other model genomes. The course will be based on the lectures, data analysis prepared in the form of the poster by students, individual student presentations and preparation of the genome sequencing/analysis proposal. The material for the course includes analysis of primary literature in area of genomics including articles in Nature, Cell and Science.

Contingency Plan: This course will be delivered in-person, however in the unlikely event of any university-declared emergency, some or all of this course may be required to be delivered online, either synchronously or asynchronously. *The grading scheme will not change*. Any assessments affected will be conducted online as determined by the professor.

    Classes begin: January 6, 2025
    Spring Reading Week: February 17 – 21, 2025
    Classes end: April 4, 2025
    Exam period: April 7 – 30, 2025

4. Course Materials

Course plan (see also course planning description)

Lectures and tentative schedule:

Course plan (see also course planning description)

Jan. 9. Introduction: Genomic technologies: basis for knowledge-based economy

Jan. 16 Poster presentation : detailed technical demonstration: database use, phylogenomic programs, sequence aligning, data presentation, selection of genes for poster presentation

Jan. 23 Genome sequencing: from biological problem to the whole genome sequence and developments in genome sequencing technologies

Jan 30. From assembly to annotation: The genome annotation: from scrambled A,T,G,C to meaningful genome

Feb. 6. Spider mite genome project from scratch to one of best annotated genomes, IP and technology development

Feb. 13 Final poster presentation training session: technical questions, answers and demonstrations

Feb. 27 Poster presentations

Mar. 6   Genome presentation 1/2

Mar. 13   Genome presentation 3/4

Mar. 20   Genome presentation 5/6

Mar. 27   Genome presentation 7/8

April. 3   Genome presentation 9/10

Apr. 13 (Monday)   Due date for the genome sequencing proposal

Required Equipment:

 Stable internet connection   **Laptop or computer with webcam**

 Working microphone

Required Reading, textbook: There is no text for this course as we will be covering material from the primary literature.

All course documents and information (syllabus, lecture files, instructional documents, required readings, etc.) **will be posted to OWL and students are responsible for checking the course OWL site (http://owl.uwo.ca) on a regular basis for updates.** If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk, which can be contacted by phone at 519-661-3800 or ext. 83800.

Personal Response Systems ("Clickers") are not used in this course.

5. Methods of Evaluation

The overall course grade will be calculated as:

The overall course grade will be calculated as listed below:

Evaluation:

poster (30%)

oral presentation (30%)

written assay (proposal) (30%)

participation (10%)

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.

Deadline with a No-Late-Penalty Period
Assignments. Students are expected to submit each of the the final assignment 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 <u>started before</u> the deadline and <u>lasted longer</u> than the No-Late-Penalty Period (24 hours).

6. Additional Statements

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.

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 will be permitted on tests and exams

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.

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).

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.

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

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/.