Western Science

Department of Biology

Course Outline (Syllabus)
Biology 2290G-Scientific Methods in Biology
Winter 2022

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**

Course Information

Prerequisites: A grade of at least 60% in Biology 1201a/1202b/1001a/1002b (Old 1222/1223) is a prerequisite for this course. Unless you have either the prerequisite for this course or written special permission from the academic counsellors in your Faculty to enrol in it, you will be removed from the 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 the course for failing to have the prerequisites.

Course description: Biology 2290F/G is a teaching laboratory course in the UWO Biology program dedicated to enabling students to apply sound experimental investigation and analyses to biological questions. Selected technical, analytical, and communication skills are introduced in diverse biological contexts as students rotate through four areas of study. See document on "The Philosophy and Ground Rules of Biology 2290" on OWL tab.

Course Delivery

Biology 2290G will be offered online Jan 10–27. Pending directive from Western University, the intent is for Biology 2290G to offer in-person labs in the Genetics and Instrumentation Units along with virtual synchronous mode starting with Rotation 2 (Jan 31st). The grading scheme will not change. Both Experimentation & Communication Unit and Information Literacy & Writing Skills Unit will be offered online for the entire term.

Biology 2290F/G will be delivered in-person and online. Virtual sessions will be a combination of synchronous (live) and asynchronous (recorded).

Depending on the unit, students will be expected to complete work prior to attending classes and or zoom meetings with professor and/or TAs**.**

Timetabled sessions will be used for in-person labs, online, lectures, quizzes, discussions, group work, etc. Next page, in the Table, are details about the sessions.

Students with Disabilities Registered with Accessible Education (AE)

In the Experimentation and Communication Unit Prof. Krajnyk, will accommodate students, registered with AE, for the online quizzes.

This Table and the one on the next page along with **Unit Roadmaps**, which are available on OWL, and 'Course Content' provide more detailed information as to how each unit will be delivered.

Mode	Dates	Sections	Time:-*Eastern Time Zone for London, Ontario, Canada*	Frequency	Attendance
Virtual synchronous*****	M/W T/Th T/Th T/Th	001, 004, 007, 010 002, 005, 008, 011 003, 006, 009, 012 013, 014	2:30 PM–5:30 PM 8:30 AM–11:30 AM 2:30 PM–5:30 PM 6:30 PM–9:30 PM	bi-weekly	Yes. Participation may require video to be ON******
Virtual asynchronous	N/A		Hours above recommended when not synchronous	bi-weekly	N/A

(*****Virtual synchronous sessions may be recorded for later viewing)

(******If video needs to be ON you may be placed in breakout rooms)

Online Participation and Engagement

- Students are expected to participate and engage with content as required by each unit
- **Attendance will be taken** for in-person labs (Genetics and Instrumentation Units) and Zoom meetings with TAs (Experimentation and Communication Unit)
- Students are expected to know how to save a file as a PDF
- Students can also participate by interacting in the OWL forums and/or Zoom meetings with their peers, TAs, and instructors

- Students are encouraged, when possible, to use designated lab times for asynchronous content to prepare for the next class and not to fall behind in their work as each class builds on the previous one
- Students are expected to participate meaningfully during synchronous classes or post on forums after watching the videos/recordings

Summary of Course Structure

Students are registered into one of 14 Sections (001–014). The term is divided into 4, three-week-long rotations (Rotation 1–4). Four Units are offered in each rotation.

Scheduled Class Times–Eastern Time Zone for London, Ontario, Canada

In-person labs will be offered in the Genetics and Instrumentation Units along with virtual synchronous mode starting with Rotation 2 pending directive from Western University.

	Genetics Unit (GU) Sections **Blended**	**Instrumentation Unit** (IU) Sections **Blended**	**Experimentation and Communication Unit** (ECU) Sections **Online**	**Information Literacy and Writing Skills Unit** (ILWSU) Sections **Online**
Rotation # 1 Jan 10–Jan 27	001,002,003	004,005,006	007,008,009,014	010,011,012,013
Rotation #2 Jan 31–Feb 17	004,005,006	007,008,009	010,011,012,013	001,002,003,014
Rotation #3 Feb 28–**Mar 15**	007,008,009,014	010,011,012,013	001,002,003	004,005,006
Rotation #4 **Mar 16**–Mar 31	010,011,012,013	001,002,003,014	004,005,006	007,008,009

Daytime Sections (001–012)

Mon and Wed	2:30 PM–5:30 PM	Sections 001, 004, 007, 010
Tues and Thurs	8:30 AM–11:30 AM	Sections 002, 005, 008, 011
Tues and Thurs	2:30 PM–5:30 PM	Sections 003, 006, 009, 012

Evening Sections (013 and 014)

Tues and Thurs	**6:30 PM–9:30 PM**	
Rotation #1 (Online)	013 ILWS Unit	014 EC Unit
Rotation #2 (Online)	014 ILWS Unit	013 EC Unit
Rotation #3 (Blended)	013 I Unit	014 G Unit
Rotation #4 (Blended)	014 I Unit	013 G Unit

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.

Key Sessional Dates (2022)

Jan 10	**Official start of classes for Biology 2290G**
Feb. 19–27	Reading Week (Saturday-Sunday)
March 14	Last day to withdraw from a second-term half course (i.e. 2290G) without academic penalty
April 8	**Last day of classes**
April 9	Study Day
April 10–30	Final examination period (excluding April 15–17 for Easter and Passover)

See https://www.westerncalendar.uwo.ca/SessionalDates.cfm for a complete list of sessional dates.

Instructor Information

Genetics Unit and Instrumentation Unit	**Experimentation and Communication Unit & Instrumentation Unit**	**Information Literacy and Writing Skills Unit**
Dr. Michelle Belton (she/her) mharris7@uwo.ca	Prof. Irene Krajnyk (she/her) ikrajnyk@uwo.ca **Course Coordinator**	Prof. Patricia Gray (she/her) tgray5@uwo.ca

Office hours: By appointment as specified by instructors in each unit

Laboratory Technicians: Jeni Duro, Macon Coleman, and Lauren Solomon.

Teaching Assistants: Graduate student Teaching Assistants (TAs) will be **present at many class times**.

Email policy:

1. When communicating with instructors and TAs, use your uwo email account only**.** We will not respond to emails originating from non-uwo email accounts. Not checking your UWO account is not a valid excuse for missing essential communication.

2. **Include 2290G plus your lab section number in the subject line of any emails that you send. Address professors with appropriate salutation.** Emails containing unsolicited attachments will be automatically deleted.

3. All emails will be responded to within 48 hours during weekdays (not including weekends and holidays). Emails will usually be addressed during regular work hours (9:00 am to 5:00 pm). We may choose, at our discretion, to respond outside these hours, depending on availability.

4. When you self-report an absence (SRA) or obtain an AC (academic accommodation from counsellors), please clearly state/give the **name of the professor** (not all the professors) and the **exact name of the activity or assignment submission** you missed (check the Unit roadmap and this course syllabus).

Course Materials

Biology 2290F/G requires that you have the following:

 Stable internet connection

 Laptop or computer

 Working microphone

 Working webcam

Google Chrome or Mozilla Firefox are the preferred browsers to optimally use OWL. Update your browsers frequently. Students interested in evaluating their internet speed, please click **here.**

Access to Zoom via OWL. For technical assistance with Zoom, please contact the Western Technology Services Helpdesk at https://wts.uwo.ca/helpdesk/.

All course material will be posted to OWL: **http://owl.uwo.ca**. Use your UWO email username and password.

Check OWL (http://owl.uwo.ca) on a regular basis for news and updates. We will use ***uwo email*** and/or ***Announcements*** as a primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL and **uwo.ca email account on a regular basis**.

If students need assistance, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk by phone at 519-661-3800 or ext. 83800.

Course Content

Course content created by a faculty member is considered the faculty member's intellectual property and is also copyrighted (©); it must not be distributed, shared in any public domain, or sold by a student or other third party WITHOUT prior written consent of the faculty member. Participants in this course are not permitted to record, videotape, or photograph lectures, etc. except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

The content of each of the four Units follows. Assignments, quizzes, and the weight of each as a percentage of the course mark, are included in italics in parentheses.

Genetics Unit (GU)–16% (Dr. Belton)

Note: Group A and Group B are cohorts of a single section. This has been done to maintain 50% capacity and 2 m physical distancing while in lab. Students will be assigned to either group A or group B in the first week of class.

Class 1: Restriction Digest and ligation (in-person lab group A).
Complete the bacterial cloning online learning module (OLM) found on ***OWL.***

Class 2: Restriction Digest and ligation (in-person lab group B).
Complete the Transformation results and Miniprep OLMs.

Class 3: Plating and ***Quiz #1 (4%)*** (in-person lab group A)
Complete Sequencing OLM.
Transformation and ligation efficiency assignment (2%)

Class 4: Plating and ***Quiz #1 (4%)*** (in-person lab group B)
Complete Experimental Design OLM and begin designing your assigned experiment**.**

Class 5: Results and ***Quiz #2 (3%)*** (in-person Group A)
Experimental design diagram assignment (2.5%)

Class 6: ***Experimental Design video assignment (2%)***
Virtual Lab book (2.5%).

Instrumentation Unit (IU)–16% (Dr. Belton & Prof. Krajnyk)

Note: Group A and Group B are cohorts of a single section. This has been done to maintain 50% capacity and 2 m physical distancing while in lab. Students will be assigned to either group A or group B in the first week of class.

Class 1: Pipetting lab (in-person Group A)
Complete Pipetting and Measurement Online Learning Modules (OLM).

Class 2: Pipetting lab (in-person Group B)

Class 3: Standard Curve lab and ***Quiz 1 (3%)*** (in-person Group A)
Complete Spectrophotometry and Standard Curve OLMs.
Methods Assignment (2.5%)

Class 4: Standard Curve lab and ***Quiz 1 (4%)*** (in-person Group B)
Class 5: Q&A and **Quiz 2 (4%)** (in-person Group A)
Application of Spectrophotometry principles to Plate Reader and NanoDrop OLM.
Standard Curve Assignment (2%)
Class 6: Q&A and **Quiz 2 (3%)** (in-person Group B***)***
Virtual Lab book (2.5%), Data Set Analysis (2%).

Experimentation and Communication Unit (ECU)–16% (Prof. Krajnyk)

Class 1: Welcome to the Experimentation and Communication Unit. Outline of objectives for this unit. Introduction to the importance and design of lab notebook. Introduction to protocol, flow chart, and PAD 1. Introduction to the scientific method. Introduction of team projects and discussion with each team regarding experimental design. ***3 min. project presentation and team discussion with TA***.
Class 2: Discussion and example on how to write research hypotheses. Introduction to poster (conference-style) design and content. ***(Quiz #1 (1.0%). DUE: protocol, flow chart, objective, hypotheses, prediction, and team discussion with TA.***
Class 3: Introduction to statistical analyses. Experimental data for each project. Statistical analysis of experimental data. ***(Quiz #2 (1.5%). DUE: Table with experimental data and team discussion with TA. Send one primary article per team to TA by 1 PM today.***
Class 4: Setting up Tables/Figures with examples on writing the results section. Introduction to (conference-style) PowerPoint (Oral) presentation of experimental results. ***DUE: Primary article questions and team discussion with TA***.
Class 5: PAD 2 and how to submit poster to Turnitin. ***(Quiz #3 (2%). DUE: Methods and Results sections for poster and team discussion with TA***. ***See Submissions and Deadlines document in Class 5 on OWL.***
Class 6: Presentation day. ***PowerPoint (Oral) presentation (3%). Poster presentation accompanied with an interview session (6%). Virtual lab notebook (2.5%)***. ***DUE: Submission of documents, see class 5.***

Information Literacy and Writing Skills Unit (ILWSU)–22% (Prof. Gray)

Each session comprises a 'virtual office hour;' in which attendance is mandatory and recorded. Students are expected to work independently on their assignments in and out of designated class times. Instructions, learning modules, examples, practice exercises, and other guides are available on OWL. Details of deadlines are given in Rotation Calendar. Read and follow instructions for exit stamps **(2%)** in the ASSIGNMENTS document on OWL.

Class 1: Virtual office hour. Topic approval and assignments. Meet and greet.
Class 2: Virtual office hour. Citations and References group exercise ***(DUE: CitRef exercise (1%). One submission per group to OWL assignment gateway).***
Class 3: Virtual office hour. PEER CHECK: sources. ***(DUE: Plagiarism Quiz*—see Tests and Quizzes on OWL *(1%).***
Class 4: Virtual office hour. PEER CHECK: graphics.

Class 5: ***Submit complete draft of essay to OWL assignment gateway ONE HOUR before Session 5.*** Peer review during class. ***DUE: Submit PEER REVIEWS (2%) to OWL assignment gateway before end of session. DUE: GEM essay (16%) to OWL assignment gateway ONE DAY after Session 5.***

Course Learning Outcomes

The **general course learning outcomes** for the four course Units are briefly summarized below. More detailed course learning outcomes, and the Units to which they apply, follow.

Upon successful completion of Biology 2290F/G, a student will be able to do the following:

Apply the knowledge of bacterial cloning to explain transformation and ligation efficiency results. Use this same knowledge to design and execute an independent cloning experiment using *E. coli*. Understand required controls for experiments and apply this knowledge to an independent experiment**.** Perform simple sequence analysis **(Genetics Unit)**.

Learn about and apply the scientific method, work as a collaborative team to design and implement an experiment, collect data, perform statistical analysis on experimental data, and use primary articles to provide a logical and plausible interpretation of your results. Be able to communicate experimental findings in the form of a poster and PowerPoint presentation—conference style—incorporating relevant information from the scientific literature to lend support to your research **(Experimentation and Communication Unit)**.

Apply the principles of light spectrophotometry covered in class to collect data for the quantification of a variety of materials using different instruments. Analyse the data collected from a variety of instruments to reach a conclusion. Compose a methods section from a provided protocol **(Instrumentation Unit)**.

Research a unique topic that illustrates a principle of evolution. Use databases, instructor-provided resources, practice exercises, and peer reviews to construct a scientific review. Understand the principles of academic integrity and use appropriate strategies to avoid plagiarism. **(Information Literacy and Writing Skills Unit).**

Detailed Course Learning Outcomes

Student success in achieving the following specific course learning outcomes will be assessed by the methods indicated in footnotes numbered [1] to [7].

Upon successful completion of Biology 2290F/G, a student will be able to:

- Work safely in a laboratory [1] (G-Unit, EC-Unit, & I-Unit).

- Write a protocol, a flow chart, and perform an experiment to test a hypothesis (including predictions, appropriate controls, treatments, replications, randomization, and consideration of statistical tests to be used [1, 3]) and explain features that exemplify best practice in experimental design (G-Unit, EC-Unit, & I-Unit).
- Follow a standard protocol for bacterial cloning using appropriate aseptic methods [1] (G-Unit).
- Explain the purpose of reagents, temperatures, and incubation times for the theory of bacterial cloning [3, 5] (G-Unit).
- Explain the structure and use of R-plasmids for bacterial transformation [3] (G-Unit).
- Learn how to use a statistical software program and explain the outcome of statistical results with particular reference to ANOVA and Tukey's *post hoc* tests [3, 4, 5] (EC-Unit).
- Search databases (e.g. Web of Science) for information from the scientific literature to create a logical and plausible interpretation of experimental results or scientific hypotheses [7] (EC-Unit & ILWS-Unit).
- Maintain a laboratory notebook in a manner that would be acceptable in a research laboratory [2] (GUnit, EC-Unit, & I-Unit).
- Use equipment relevant to their individual or group experiments not mentioned elsewhere (e.g. leaf area meters, chlorophyll meter, quadrats) (EC-Unit).
- Reliably dispense mL volumes using glass pipettes and µL volumes using mechanical micropipettes [1] (G-Unit, EC-Unit, & I-Unit).
- Use basic chemical equations to calculate dilutions, the concentrations and volumes of solutions or the molecular weight of the solute [3, 5] (EC-Unit & I-Unit).
- Correctly use and interconvert SI Units of Measure [3, 5] (G-Unit, EC-Unit, & I-Unit).
- Correctly use scientific names and nomenclature (all units)
- Use style guidelines to create or cite tables and figures with self-explanatory titles and legends in a style that would be acceptable for publication [5, 6, 7] (All units).
- Communicate experimental outcomes in the form of conference style oral presentations (with PowerPoint images) and poster presentations [4, 6] (EC-Unit).
- Explain how a visible range spectrophotometer works with particular reference to how monochromatic light is generated and how specific wavelengths of the monochromatic light are directed towards the sample solution [3] (I-Unit).
- Explain how light is attenuated exponentially as it passes through the path length (l) of an absorbing solution (Lambert's Law), describe the relationship between light transmittance (T) and absorbance (A) ($A = \log_{10}$) and the linear relationship between absorbance (A) and concentration (c) ($A = E.c.l$, Beer's Law) [3, 5] (I-Unit).
- Set up a visible range spectrophotometer correctly and use it to measure light absorbance using an appropriate reference blank solution (I-Unit).
- Use the spectrophotometer to create an absorption spectrum to determine the wavelength of maximum absorbance (λ_{max}) or to partially identify an unknown chemical compound by comparison with known standards [3] (I-Unit).
- Use the spectrophotometer to create a standard curve of absorbance *vs* concentration and determine the absorption coefficient (E = the slope of the standard curve) [3] (I-Unit).
- Calculate the number of cells/ mL in liquid bacterial cultures using the diluting and plating method [3, 5] (G-Unit).

- Use a clinical centrifuge, for example, to separate cells from liquid media (G-Unit, EC-Unit, & I-Unit).
- Work collaboratively in a 'research' team, assume responsibilities within the team and communicate with and respect the opinions of other members (EC-Unit & I-Unit).
- Use the knowledge and skills developed in the course to select relevant information that can be used to solve problems on assessments that resemble, but are not identical to, material worked on in the course [3] (G-Unit, EC-Unit, & I-Unit).
- Use appropriate and relevant scientific sources to interpret results and to support arguments [7] (ILWS-Unit & EC-Unit).
- Write a scientific review of an approved or assigned topic based on given examples and instructions [7] (ILWS-Unit).
- Cite and reference sources correctly in a format assigned by the instructor [7] (ILWS-Unit & EC-Unit).

Footnotes and Assessments.

[1] Correct aseptic technique and micropipetting are assessed in a lab.
[2] The laboratory notebooks are handed in and assessed after each of the three laboratory units.
[3] May be assessed in the final exam.
[4] Assessed in poster and orally-delivered PowerPoint presentations.
[5] Assessed in lab quizzes.
[6] Assessed in graphing assignments.
[7] Assessed in writing assignments.

Assessments and Final Exam

In Biology 2290F/G, the following assessments will be used and these examples are based on previous offerings of the course and the learning outcomes that have been set.

- Timed and untimed weekly quizzes
- Individual written assignments
- Oral presentations
- Poster presentations
- Participation via Zoom
- Discussion forums
- Group work
- Break out rooms
- Group assignments
- Outline peer reviews
- Proctored Final Exam
- Peer assessments

The following **interfaces** will be used for these assessments:
Gradescope, OWL quizzes, OWL assignments, with or without use of Turnitin, Zoom.

1a Final Grades will be derived from "in-class" term work and a Final Exam.

1b **70%**–Assignments, quizzes, etc. completed while the course is in progress.

1c **30%**–Final Exam (as scheduled by the Registrar). The final exam covers materials from the G-Unit (10%), EC-Unit (10%), and I-Unit (10%) only. No aids of any kind—electronic, notes, etc.—may be used

in the final examination. ***Final Exam–The final exam will be in-person and information will be provided in Rotation 4. In the event that we need to pivot online, due to Covid-19, we will inform you, in Rotation 4, how the final exam will be delivered.***

2. **The final exam in this course must be attempted otherwise a grade of "F" will be assigned to the course.** There will be one written make-up examination in Biology 2290F/G. Students who have valid documented reasons (through the academic counsellors in the Dean's Office) for missing the makeup will write the exam during the final exam period the next time the course is offered.

3. Assignments (including in-class quizzes, writing and graphing exercises, oral and poster presentations, practical tests and a properly maintained lab notebook) will be administered and due as indicated in the section on course content.

4. If a component of the course is missed for a **validly documented** reason, the instructor will transfer the allocated percentage for the missed component to the percentage of the final examination for that unit (exception ILWS-Unit).

5. There are no accommodations for the exit stamps or the Plagiarism Quiz. Students who miss an activity (ONE of CitRef or Peer Review, NOT both) for a validly documented reason will have the percentage allocated to the final essay. If either the CitRef or Peer Review is accommodated, the essay cannot also be accommodated. Students who submit the essay past 24 h beyond the deadline WITHOUT a validly documented reason will receive a grade of '0' for the assignment and will be denied credit for the course. Failure to submit the essay will lead to **a grade of 'F' in the course**.

6. Once assignments, etc. have been returned there is a **48 hr cool-down period** before asking questions.

7. Reassessing your term work/final exam**.** If you wish to have any rotation work reassessed, the instructor of the unit will instruct you on the appropriate procedure to take. Your mark may remain the same, increase, or decrease. The revised mark will replace the original mark with no basis for appeal.

8. Re-assessment of all rotation work (assignments and tests) must be completed **within one week of grades appearing on OWL in Gradebook** or in the OWL Assignment/Gradescope marked document, whichever applies to your rotation**.**

9. 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 or assigned when course is dropped with academic penalty

10. No special rounding rules (e.g. to meet GPA cut-offs, minimal requirements for programs, etc.) are applied in this course when calculating final course grades. Course components will not be reweighted, nor will additional assignments be accepted, to accommodate perceived poor performance on any assessment or for any unaccommodated absence during a graded component of this course.

11. During the course assessments and the final exam aids such as notes, cellular phones, iPods, smart watches, and other similar technology are **not permitted** for any reason.

Course Policies

1. In Biology 2290F/G participation/attendance will be required at various times for the different units in order to obtain credit/mark for that event/activity.

- Students missing more than 2 events/activities in any one of the following Units: GU, IU, ECU will receive a **grade of "F" for the entire course.**
- Students missing more than 2 in-person labs or more than 2 online zoom meetings in any one of the following Units: GU, IU, ECU will receive a **grade of "F" for the entire course.**
- Students who fail to complete the essay assignment in the ILWS Unit will receive a grade of "F" for the entire course.
- Students holding a job and/or volunteering during designated class times will have no basis for appealing missed activities and/or attendance in Biology 2290F/G.
- This “F” may be revised to “INC” (incomplete) only upon recommendation from the academic counsellors in your Dean’s Office in cases of documented health or compassionate concerns. **No more than one missed unit in this course will be granted an INC.** If an INC is granted by the academic counsellors, then the INC will be completed at the next offering of the course provided that the course is not full.

2. **Regarding SRAs:** Students have been instructed to contact the professor directly no later than 24 hours after the end of the period covered by the self-reported absence, to clarify how they will be expected to fulfill the academic expectations they may have missed during the absence. If the student does not follow-up directly, then the self-reported absence will be considered **VOID**.

3. If an event/activity requires that your camera/video is ON, you will be placed in breakout rooms. If your video is OFF, then you will be considered as having **missed** the event/activity. See #1 above.

4. Course material (i.e. **lecture slides, videos, and other supplementary material** posted on OWL), **team projects, assignments, quizzes, tests, and exams** are the intellectual property of your instructor (**items bolded are shared with the student and the University**) and are for your personal use only.

5. Sharing, posting or using this material outside of your personal use is considered an infringement of **intellectual property rights.** ***Experiments, particularly in the EC-Unit, are the copyrighted (©) intellectual property of the professor and may not be published without written permission of the professor.***

6. Students absent for any in-class assessments will have their final exam re-weighted in accordance with the value of the assessment for that unit (% of final mark) upon the recommendation of the academic counsellor/self-reporting (exception ILWS unit). **Because bonus marks are not part of the unit mark, they are not appealable**. To obtain bonus marks, you must have contributed to the work and be present (video ON) during the scheduled event/activity.

7. This course requires substantial written work on assignments and the Final Exam. Although much of the work in Biology 2290 is collaborative in some way, students are expected to write independently, and in their own words. Whenever students take an idea or data from another source, they must acknowledge their debt by proper referencing. Appropriate examples will be discussed in class and/or on OWL.

   All required papers, assignments, and posters will be subject to submission for textual similarity review to the commercial plagiarism detection software under licence to the University for the detection of plagiarism. All papers submitted 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.

8. Resubmission of any assignment is not permitted without consent of the instructor. A late penalty of 25% will be applied. Assignments submitted outside OWL Assignments, Gradescope, or outside the designated "gateway" will be assessed a penalty of up to but not exceeding 25%.

9. It is the responsibility of the student to ensure proper access to OWL and the Assignments tab. If access to OWL is unavailable (due to maintenance, etc. by UWO), then appropriate alternate arrangements will be announced by the instructor.

10. **Late Submissions** received **within** 24 hours of the deadline (where applicable) will be assessed a penalty of 25%. Submissions received **later than 24 hours past the deadline** will receive a mark of zero. It is the responsibility of the student to immediately consult with the instructor and follow instructions provided by the instructor. Requests for an extension or a grade of "absent" in cases involving documentable health or compassionate concerns must be referred to the academic counsellors in your Faculty.

Accommodation and Accessibility

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD), 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 Consideration for Student Absences

Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes (**NOT through their course instructors**):

(i) Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:

- an absence must be no more than 48 hours
- the assessments must be worth no more than 30% of the student's final grade
- no more than two SRAs may be submitted during the academic year.

(ii) For medical absences, submit a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.

(iii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that in all cases, students are required to contact their instructors within 24 hours of the end of the period covered, unless otherwise instructed in the course outline.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For the policy on Academic Consideration for Student Absences—Undergraduate Students in First Entry Programs, see:

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

and for the Student Medical Certificate (SMC), see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students must 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

Academic policies

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
- ☒ Students may be expected to take an academic integrity pledge before some assessments
- ☒ All recorded sessions will remain within the course site or unlisted if streamed

Online Etiquette

Some components of this course will involve online interactions. 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 for the entire class unless you are invited to speak
- 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 (or designated TA) 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.

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.

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

Review Biology 2290 learning outcomes. You are expected to know what plagiarism is at this stage of your programme.

Turnitin ***aids*** in identifying plagiarism. Some assignments may be subject to submission for textual similarity review to the commercial plagiarism detection software under licence to the University for the detection of plagiarism. Assignments 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.

Support services

Please visit the Science & Basic Medical Sciences Academic Counselling 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/**

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 (519) 661-2147 if you have any questions regarding accommodations.

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/**

Learning-skills counsellors at the Student Development Centre (**http://www.sdc.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.

At Learning Development & Success (LDS), our focus is on helping students learn and study more effectively so that they can achieve their academic goals. LDS is there for all Western undergraduate and graduate students—students experiencing academic setbacks, as well as students wanting to maintain an exceptional academic standing. One-on-one help with academic skills & strategies. To book, students can visit WSSB 4100, call 519-661-2183, or email **learning@uwo.ca**.

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

Additional student-run support services are offered by the USC: **https://westernusc.ca/your-services/**

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at **ssc@uwo.ca.**