

Department of Biology *and* Department of Statistical & Actuarial Sciences
Biology/Statistics 2244B – “Statistics for Science”
Course syllabus/outline for Summer Distance 2026 (term 1265)



Western University is committed to a **thriving campus**. We encourage you to check out the [Your Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>. Students who are in emotional/mental distress should refer to Mental Health@Western (<http://uwo.ca/health/>) for a complete list of options about how to obtain help.

Course Information

Biology 2244B and Statistics 2244B, sections 650, SU26

An introductory course in the application of statistical methods, intended for students in departments other than Statistical and Actuarial Sciences, Applied Mathematics, Mathematics, or students in the Faculty of Engineering. Topics include sampling, confidence intervals, analysis of variance, regression and correlation.

List of Prerequisite(s)

1.0 mathematics course, or equivalent numbered 1000 or above. Data Science 1000A/B or the former Statistical Sciences 1024A/B or Integrated Science 1001X can be used to meet 0.5 of the 1.0 mathematics course requirement.

List of Antirequisite(s)

All other courses in Introductory Statistics (except Statistical Sciences 1023A/B, Data Science 1000A/B, or the former Statistical Sciences 1024A/B): Economics 2122A/B, Economics 2222A/B, Geography and Environment 2210A/B, Health Sciences 3801A/B, MOS 2242A/B, Psychology 2811A/B or the former Psychology 2810, Psychology 2801F/G or the former Psychology 2820E, Psychology 2830A/B, Psychology 2850A/B, Psychology 2851A/B, Social Work 2207A/B, Sociology 2205A/B, Statistical Sciences 2035, Statistical Sciences 2141A/B, Statistical Sciences 2143A/B, Statistical Sciences 2858A/B.

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the Department of Biology or Department of Statistical & Actuarial Sciences to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record.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

Land Acknowledgement

Some of my core teaching practices/values stem from opportunities I have had to learn from, and work alongside, diverse Indigenous peoples. My “call” to education was originally centred around sharing my knowledge of plant communities and natural environments, fostered by time spent in Algonquin Provincial Park, Kananaskis, and Thousands Islands National Park. Currently, I am reflecting on the nature of knowledge, and how students of statistics would benefit from *Etuaptmumk*¹. The land has been, and continues to be, core to my development as a person. As such, I want to acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak, and Chonnonton Nations, 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 (First Nations, Métis and Inuit) whom I recognize as contemporary stewards of the land and vital contributors to our society.

¹ *Etuaptmumk* is a Mi'kmaw word meaning “Two-eyed Seeing”, a concept developed by Mi'kmaw Elder Albert Marshall; <https://www.2eyedseeing.ca/about-5>

Course Schedule and Delivery Mode

Universal Design for Learning

This course applies principles of **Universal Design for Learning** (UDL), which “focuses on eliminating barriers through initial designs that consider the needs of diverse people”². In addition to basic practices (e.g. closed captioning, alternative text/verbal description of visuals, text-to-speech formatted documents, high contrast colour/patterns in visuals, etc.), you will encounter a combination of audio, video, and/or text-based resources; diagnostic assessments (“What do you know?”) and “self-assessments” to help you efficiently allocate your time for learning; optional self-reflection prompts alongside the self-assessments to help connect the course material to your personal experiences; scaffolding to support success on assignments; deadlines with automatic no-late penalty periods; and alternative grade weighting schemes to partly accommodate individualized rates of mastery.

Delivery of course material

This course is timetabled as a **distance course (section 650)**; for Biol/Stat 2244, *lecture AND lab content* is delivered **asynchronously online**. Having access to a reliable internet connection, and, ideally, dedicated access to a laptop or desktop computer is necessary to be successful. The **only in-person requirement is the Final Exam**.

Timetable

You are responsible for setting your own schedule to complete the content; a suggested timeline for completing individual lecture topics and lab modules will be set up on the course OWL site. Please plan for approximately **4 to 6 h of lecture material** plus **2 to 6 h of lab material** to cover each week, in addition to time you allocate for practice, review, and working on assessments for submission. This is consistent with the compression of this course to a 6-week time frame.

Important Dates

- **Classes start:** June 15, 2026
- **Add Deadline:** June 19, 2026
- **Drop Deadline:** July 20, 2026
- **Classes end:** July 24, 2026
- **Exam period:** July 27–30, 2026

Course Schedule

The planned schedule for lecture and lab topics, and assessment due dates is provided below. Some modifications may be made to the lecture topics or order as the course progresses.

Any changes to due dates will be announced in the weekly OWL Announcement. Further information about the Assessments is provided later, in the section on Methods of Evaluation. **All due dates are 11:55 pm on the day identified (unless specified otherwise).**

² Novak, K. and T. Thibodeau. 2016. UDL in the Cloud: How to design and deliver online education using Universal Design for Learning. CAST, Inc., Wakefield, Massachusetts.

| Week | Course Topics | Learning Activities | Putting theory into practice Project | Professionalism Components |
|-------------------|--|--|---|---|
| June 15–21 | Introduction to 2244 Lecture topics: Exploring variation and distributions; Building a research question; Sampling concerns & strategies Lab topics: Setting up R; Data structures & data frames; R markdown files | | Research Question Fri, June 19 | |
| June 22–28 | Lecture Topics: Data collection concerns & principles; Summarizing & visualizing data; Data ethics: Consent, data sovereignty & reuse; outliers, misleading graphs Lab topics: Sampling and randomization; Data cleaning, summarizing, and transformation in R; | Data collection principles and basics of R Fri, June 26 | Variable identification Fri, June 26 | |
| Jun 29– July 5 | Lecture topics: Basics of General Linear Models; Quantifying error and comparing model fit Lab topics: Resampling and simulation in R; LaTeX for math notation | Summarizing Data and Data ethics Mon, June 29 | Fishbone diagram Fri, July 3 | Peer Review of Variable identification: Wed, July 1 |
| Sun July 5 | Online Quiz: Available between 9:00 am – 9:00 pm EST | | | |
| July 6–12 | Lecture topics: Sampling distributions, randomization tests, and P-values; F-test (ANOVA) for multiple means; t-test for slope of regression Lab topics: Hypothesis testing in R, part I | Learning to reflect Fri, July 10 | | Peer Review of Fishbone Diagram: Wed, July 8 |
| July 13–19 | Lecture topics: t-tests for means; chi-square test of independence Lab topics: Hypothesis testing in R, part II | Simulation and models Fri, July 17 | Graph Choices Mon, July 13 | Peer Review of Learning to Reflect Wed, July 15 Peer Review of Graph choices: Fri, July 17 |
| July 20–26 | Lecture topics: Parameter estimation and confidence intervals; Cautions and concerns for statistical inference Lab topics: bootstrapping and confidence intervals in R | | Making choices Fri, July 24 | |
| July 27–30 | Final Exam Period (in-person exam) <i>Exam date is set by the Registrar (expect schedule release in early July)</i> | | | |

Learning Outcomes

Statistics is a scientific discipline that informs all stages of research, from problem definition to conclusion. This course follows the PPDAC framework³, focusing on knowledge/skills relevant to address questions that guide each stage of research. A successful student will demonstrate proficiency with most of the following:

| | |
|--|---|
| Design sampling and study procedures to collect relevant data addressing a research question | <ul style="list-style-type: none">• Create a well-described, testable research question• Recognize and apply sampling (e.g. stratified, SRS, etc.) and data collection techniques (randomization, replication, methods of control)• Recognize and discuss data concerns (e.g. sampling bias, undercoverage, confounding, ecological validity, consent, data sovereignty and reuse) |
| Create and interpret appropriate summaries of data | <ul style="list-style-type: none">• Describe data structure (e.g. type of variables, pairing vs. independence)• Select appropriate summaries based on research question and variables• Interpret common graphical and numerical summaries of univariate, bivariate, and/or multivariate data |
| Create and compare statistical models, and explain conceptual background for modeling | <ul style="list-style-type: none">• Explain statistical modeling as a framework for partitioning variation• Create and interpret general linear models (e.g. $Y = \beta_0 + \beta_1 X + \varepsilon$, $\varepsilon \sim N(0, \sigma^2)$) with categorical or quantitative predictors• Compare competing models using appropriate criteria (e.g. sum of squares) |
| Analyse data using varied techniques to address a research question | <ul style="list-style-type: none">• Use resampling, randomization tests, and common parametric methods (e.g. ANOVA, simple linear regression, t-tests) to test hypotheses or estimate parameters• Evaluate model diagnostics (e.g. independence, Normality, homoscedasticity) and identify violations that affect validity of inference |
| Use R (statistical software) to clean, summarize, analyse, and communicate data in a reproducible manner | <ul style="list-style-type: none">• Perform basic data cleaning (e.g. transformation, outlier identification) and create graphical and numerical summaries of data• Conduct and interpret inference procedures, including model diagnostics and resampling techniques• Create reproducible analyses/reports using R markdown and LaTeX |
| Communicate statistical concepts, analyses, and arguments in an accurate and scholarly manner | <ul style="list-style-type: none">• Describe statistical concepts with appropriate vocabulary/symbols in applied contexts• Explain the role of sampling distributions and estimators in inference• Justify choices (e.g. data collection, visualization, statistical models) with prioritization of data quality, transparency, and parsimony |
| Engage in practices that support the development of professionalism and metacognition | <ul style="list-style-type: none">• Provide and incorporate constructive and actionable peer feedback• Reflect on learning and experiences to help inform future learning• Demonstrate behaviours consistent with best strategies for learning• Use citation and attribution to recognize sources of information / knowledge |

³ Mackay, R.J., and R.W. Oldford. 2000. Scientific method, statistical method, and the speed of light. *Statistical Science* 15(3): 254-278.

Course Materials

Required materials

These materials are required in that each student needs *access* to them to be successful in the course. In addition to these main resources, we will occasionally use freely available articles, videos, and applets to supplement your learning, as well as institutionally-supported (no cost to the student) assessment software (e.g. Gradescope, comPAIR).



Students are responsible for checking the OWL site, **STATS 2244B 650: Statistics for Science** regularly. It provides the following content (*relevant OWL tools identified in parentheses*):

- Lecture and lab materials (*Content*)
- Assessment instructions/materials (*Assessments* → *Assignments*)
- Practice questions (*Content*)
- Communication tools (*Discussions, Announcements*)
- Due dates and help sessions (*Calendar*)



The **Labs** require using the statistical software program **R**, and the integrated development environment, **R Studio**, to work with data and communicate. **Both software packages are free** to use either through Posit Cloud (browser based option) or for download to your personal computer. Instructions for accessing the software will be provided in Labs.

If you need assistance with OWL, please seek support on the OWL Brightspace help page: brightspacehelp.uwo.ca. Alternatively, contact the [Western Technology Services Helpdesk](#) (by phone at 519-661-3800 or ext. 83800).

No textbook is required or recommended for this course.

Methods of Evaluation

*This course uses **Specifications Grading** for some components; briefly, this means that there will be a list of requirements ('specifications') that all must be met to earn credit for a particular assessment and/or bundle in the grading scheme. The specifications / rubric for individual assessments will ALWAYS be communicated in advance. If—at ANY time—you are uncertain about expectations for an assessment or about the grading, ask for clarification. If you're interested in learning about "Specs Grading" in general, there's a nice blog post [here](#).*

Overview of Grading Distribution

There are five graded components: Project, Professionalism, Activities, Online Quiz, and the Final Exam. The baseline weight of each component is described below. Three alternative distributions are provided. Each student's **final course grade will reflect the distribution that results in the highest possible grade.**

| Component | Baseline | Alternative 1 | Alternative 2 | Alternative 3 |
|-----------------|----------|---------------|---------------|---------------|
| Project | 13% | 13% | 13% | 13% |
| Professionalism | 7% | 7% | 7% | 7% |
| Activities | 15% | 5% | 15% | 5% |
| Online Quiz | 10% | 10% | 0% | 0% |
| Final Exam | 55% | 65% | 65% | 75% |

Essential Requirements to pass Biol/Stat 2244

Even when Academic Consideration is granted for missed coursework, the following is deemed essential to earn a passing grade (i.e. 50% or more):

- earning at least 50% on the Final Exam.

Failing to meet this Essential Requirement will result in a **final course grade of 40%** (or your actual computed grade, whichever is lower), regardless of your achievements on other components of the course.

Assessment Descriptions

Each of the graded components of the course assessment are briefly described here; detailed instructions will be provided on the OWL site, under *Assessments*→*Assignments*. **Take time to review the section on General Information about Missed Coursework (page 11).**

Activities.

WHY? *Activities* are created to:

- encourage regular engagement and review of lecture and lab content;
- provide low-stakes assessment of your application of course content;

WHAT? *Activities* will involve answering a handful of questions (typically multiple choice, short answer, and possibly file/image uploads).

HOW? All *Activities* will have instructions provided through the OWL Assessments→Assignments, with corresponding access to submission portals (e.g. Gradescope, compPAIR, OWL). You will typically have 2-3 days to work on and submit the Activity.

EVALUATION? *Activities* are graded on a 3-level rubric using Full credit (highest level), Partial credit, and No credit (lowest level). Details on requirements for each level will be provided within the *Activity* instructions. The *Activities* grade out of 15% is based on the combined levels achieved across all *Activities*, as described in the following table. There are no intermediate grades (e.g. no opportunity for 14%).

| To earn: | Achieve ALL of the following specifications: |
|----------|--|
| 15 | earn Full Credit for all 4 Activities |
| 12 | earn Full Credit for 3 Activities and Partial Credit for 1 Activity |
| 9 | Earn one of the following combos: <ul style="list-style-type: none">• Full Credit for 3 Activities, or,• Partial Credit or higher for all 4 Activities |
| 6 | earn Partial Credit or higher for 3 Activities |
| 3 | earn Partial Credit or higher for 2 Activities |
| 0 | Assigned if the 3% specifications are not met. |

For Alternative weighting schemes (see page 6) in which Activities contribute only 5%, the value out of 15% from the above table will be rescaled out of 5%. Example, earning the 12% bundle would be rescaled to $12/15 \times 5\% = 4\%$.

ACADEMIC CONSIDERATION?

48-h No-Late-Penalty Period: You are expected to submit each *Activity* by 11:55 pm on the due date. Should extenuating circumstances arise, you do not need to request Academic Consideration and are permitted to submit your Activity up to 48 h past the deadline without a late penalty. No submissions more than 48 h after the due date will be accepted. Requests for Academic Consideration will be declined based on pre-existing flexibility in the assessment (i.e. the 48-h No-Late-Penalty Period).

Professionalism.

WHY? Higher education should promote being consistently present and contributing to a shared learning community. The *Professionalism* component provides opportunities to develop and demonstrate these

characteristics through actions that suggest ongoing course engagement, and opportunities for collegial peer review.

WHAT? The *Professionalism* component has two pieces that contribute: (i) Peer Review and (ii) Engagement. The Peer Review component involves comparing pairs of anonymized colleagues' submissions (of *Project* parts and/or *Activities*) to identify which submission in the pair is stronger with respect to provided characteristics, and providing written feedback for improvement. The Engagement component focuses on your frequency / timing and use of course resources and supports.

HOW?

The Peer Review opportunities will use the ComPAIR platform, with instructions provided for each peer review opportunity. To engage with Peer Review, you must upload your own submission to ComPAIR. Data on Engagement will be assessed primarily using data collected automatically by OWL, including engagement with Discussions, and timing/frequency of access to course content.

EVALUATION? The 5% for *Professionalism* is split across the two components:

- i. **Engagement (2%):** evidence of engagement with the course content and resources will be assessed on a 3-level rubric as either Developing, Proficient, or Exemplary. Details on requirements for each level will be provided with the Engagement instructions file.
- ii. **Peer Review (5%):** graded for completion of Peer Review opportunities and content / structure of written feedback on a 3-level rubric as either Developing (lowest level), Proficient, or Exemplary (highest level). Details on requirements for each level will be provided with Peer Review instructions. The *Peer Review* grade out of 5% is based on the combined levels achieved across all *Peer Review opportunities*, as described in the following table.

| To earn: | Achieve ALL of the following specifications: |
|----------|---|
| 5% | <ul style="list-style-type: none">• Submit work to ComPAIR for at least 3 of the 4 Peer Review opportunities• Earn Exemplary for at least 3 of the 4 Peer Reviews completed |
| 4% | <ul style="list-style-type: none">• Submit work to ComPAIR for at least 3 of the 4 Peer Review opportunities• Earn Proficiency (or higher) for at least 3 Peer Reviews completed |
| 3% | <ul style="list-style-type: none">• Submit work to ComPAIR for at least 2 of the 4 Peer Review opportunities• Earn Proficiency (or higher) for at least 2 Peer Reviews completed |
| 2% | <ul style="list-style-type: none">• Submit work to ComPAIR for at least 2 of the 4 Peer Review opportunities• Earn Proficiency (or higher) for at least 1 Peer Review completed |
| 1% | <ul style="list-style-type: none">• Submit work to ComPAIR for at least 2 of the 4 Peer Review opportunities• Earn Developing for at least 2 of the 4 Peer Reviews completed |

ACADEMIC CONSIDERATION?

48-h No-Late-Penalty Period: You are expected to complete each *Peer Review* by 11:55 pm on the due date. Should extenuating circumstances arise, you do not need to request Academic Consideration and are permitted to submit your *Peer Review* up to 48 h past the due date without a late penalty. No submissions more than 48 h after the due date will be accepted. Requests for Academic Consideration will be declined based on pre-existing flexibility in the assessment (i.e. the 48-h No-Late-Penalty Period and only 3 of the 4 Peer Reviews contribute to the grade).

Project: Putting theory into practice

WHY? The *Project* provides an opportunity to progressively move through the PPDAC framework to address a research question of interest to you, with assessment of some course-level learning outcomes.

WHAT? The *Project* is split into four short preparatory parts and a fifth larger part. Each part is composed of a few short-answer questions, requiring written and/or visual responses (creating diagrams, using R, etc.). Use of R and R markdown files will be needed for some of the parts.

HOW? All 5 parts of the *Project* are take-home assignments, to be completed individually; you will typically have 3-5 days to work on and submit each part.

EVALUATION? The 13% for the *Project* is split across two components:

- **Content (3%)** – based on accuracy of application of statistical concepts used in the part of the *Project*
- **Part 5 (10%)** – based on achievement for the final part of the *Project*. This 5th part combines achievement on using R, grading of short answer questions, and reflection on learning process for the *Project*.

ACADEMIC CONSIDERATION?

48-h No-Late-Penalty Period: You are expected to submit each part of the *Project* by 11:55 pm on the due dates. Should extenuating circumstances arise, you do not need to request Academic Consideration and are permitted to submit your Part up to 48 h past the due date without a late penalty. No submissions more than 48 h after the due date will be accepted. Requests for Academic Consideration will be declined based on pre-existing flexibility in the assessment (i.e. the 48-h No-Late-Penalty Period).

Online Quiz.

WHY? The *Online Quiz* assesses your understanding, application, and integration of the course material from the first third (roughly) of the course.

WHAT? The *Online Quiz* will be composed of several short answer questions and multiple-choice questions; questions that may involve drawings, matching, etc. The *Online Quiz* is closed-book, but you may use a “One-Pager” (i.e. a single-sided 8.5” x 11” page with notes, reminders, etc.) and a non-programmable calculator.

HOW? The *Online Quiz* will be a timed, online quiz through OWL Brightspace and Gradescope; the remote proctoring software, ProctorTrack will be used requiring students to have a webcam and a quiet / private location to write the Quiz. The *Online Quiz* will be available for a 12-h period; students may complete the Quiz at any time during that availability period. However, once a student begins the Quiz, they will have a limited amount of time to complete it for submission (e.g. 1 hour). Specific details will be provided on OWL.

EVALUATION? The *Online Quiz* is graded on a traditional points-based scale. Consequently, your grade will be calculated according to the following formula:

$$\frac{\text{achieved points on quiz}}{\text{total possible points for quiz}} \times \% \text{ quiz weighting}$$

For example, if a student earns 12 out of a possible 15 points on the Quiz, then their *Online Quiz* component (10%, based on the Baseline distribution from page 5) will be $(12/15) \times 10\% = 8\%$.

ACADEMIC CONSIDERATION?

No Academic Consideration for missing the *Online Quiz* is required because the alternative grade distribution will automatically re-weight a missed *Online Quiz* to the *Final Exam*. As well, students have the opportunity to choose when they attempt the Quiz during the 12-h availability period. Given the compressed time frame for the course, no make-up Quiz will be provided.

Final Exam.

WHY? The *Final Exam* assesses your understanding, application, and integration of the course material at the end of the course, including some application of the knowledge/concepts associated with the Lab content.

WHAT? A **cumulative** exam with a combination of multiple choice and short answer questions, which may involve calculations, drawings, matching, interpretation of data, etc.. The *Final Exam* is closed-book, but you may bring a “One-Pager” (i.e. a single-sided 8.5” x 11” page with notes, reminders, etc.) and a non-programmable calculator.

HOW? The *Final Exam* will be in-person on Western campus at a time/location scheduled by the University Registrar.

EVALUATION? The Final Exam is graded using a traditional points-based scale, as described above for the Online Quiz.

ACADEMIC CONSIDERATION?

Absences for the Final Exam **always require supporting documentation** when requesting **Academic Consideration**. Students who miss the Final Exam *without* Academic Consideration will have their **final course grade submitted as 40%** (or your actual computed grade, whichever is lower), regardless of your achievement on other course components; this is because earning at least 50% on the Final Exam is an Essential Requirement. 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.

Use of Generative Artificial Intelligence (AI) tools

Artificial Intelligence (AI) tools are widely available (i.e. large language models, natural language processing applications, chatbots; e.g. ChatGPT, Claude, Gemini, Sudowrit, Grammarly, etc., etc.). Discussions in post-secondary education focus on how and why such tools should/shouldn't be used in academia. Western tells individual instructors to decide on AI-use policies for their courses. For THIS course (i.e. where transparency and reproducibility are key values), I have a policy on AI tool use that we will follow as a learning community. **You should take a few minutes to review the *complete* policy that is provided on the OWL course site; that complete policy includes a beginner's example of how generative AI works, a discussion on the philosophy behind the policy, and suggestions for how to productively and safely engage with generative AI.** If any part of the 2244 AI policy is confusing or uncertain, reach out to the instructor for a conversation before submitting your work. Violations of this policy are considered violations of Western's academic integrity and scholastic offense policies.

Policy:

1. Generative AI tools are **prohibited on the Online Quiz and Final Exam**.
2. When using Generative AI tools for other purposes in this course, you are **not permitted to upload course materials to the AI software without explicit permission from the instructor**; doing so is a breach of intellectual property rights. This applies to but is not limited to: lecture and lab materials, provided practice questions, assessment instructions / questions, and feedback / solutions for provided resources.
3. **Any use of Generative AI tools towards graded work must be documented in the References / Attribution** section of the submission. This is consistent with one of the course-level learning outcomes related to citation and attribution (see **page 5** of this syllabus). A lesson on attribution and citation will be included in the course materials to support this professional skill.
4. Generative AI tools **could be used as a personal tutor (at your own risk) to help brainstorm ideas and understand course concepts**. If these ideas contribute to your submitted work in *Activities*, the *Project*, or *Professionalism* components, you must still write in your own words, and, are ultimately responsible for their accuracy and appropriateness.
5. Generative AI is permitted to **help you proofread and/or check your work** against provided rubrics; in this use, you are permitted to upload the [provided rubric](#) to the AI software.
6. Generative AI is permitted to **help you write, troubleshoot, and learn R code**. This permission comes from awareness that experts are already using generative AI to help with their code writing—it is the new 'norm' for society. However, you are still responsible for the accuracy and suitability of the code, as well as understanding the implementation of the code.

What you should recognize from this policy is that generative AI is appropriate for helping you learn and understand in 2244—not for replacing your knowledge and work. Importantly, attribution of generative AI—as well as other sources—is a key component of this policy, consistent with the course values, and academia in general.

Rounding of Marks Statement

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** in this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. Requests for mark “bumping” will be (politely) denied. Similarly, requests for alternative assessments, submission of revisions of assessments to increase marks, or requests for ‘exceptions’ to a grading scheme will be (politely) denied on the basis that making such exceptions lacks transparency and reduces equity among students in the course.

Accommodation and Accessibility

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 policy can be found at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf

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.

Religious Accommodation

When a recognized religious holiday or observance conflicts with an examination, test, or other scheduled academic obligation, students must request accommodation via the University’s Student Absence Portal (SAP). This request should identify the conflict and specify which course component(s) (e.g. test, midterm, exam) are affected.

Students are encouraged to submit the SAP request as early as possible, but no later than two weeks before any examination, or one week before any mid-term test or quiz, to allow sufficient time for adjustment.

The SAP request serves as official notification to both the course instructor and the Academic Advising Office, in accordance with University policy: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

The Faculty of Science considers religious accommodations as scheduling conflicts. Instructors should provide either a make-up exam or an earlier sitting of the same exam to accommodate the student.

For more information on recognized religious holidays, please visit the Diversity Calendar posted on the Equity, Diversity & Inclusion website - <https://www.edi.uwo.ca>

Academic Policies

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); this refers to the **Final Exam**.
- The **Online Quiz** (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 identified as Coursework with Assessment Flexibility (this refers to *Activities*, *Professionalism*, and the *Project* that have the 48-h No-Late-Period), the request cannot be recalled and reapplied. This privilege is forfeited.

General Academic Policies

The website for Registrarial Services is <http://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 e-mail address. It is the responsibility of the account holder to ensure that e-mails 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

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.

Use of 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>).

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.

Professionalism & Privacy

Western students are expected to follow the Student Code of Conduct, available for review at <https://www.uwo.ca/univsec/pdf/board/code.pdf>. Additionally, the following expectations and professional conduct apply to this course:

- Students are expected to contribute to an inclusive and safe learning environment (online and in-person) that recognizes individual diversity and experience
- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit written permission of the instructor
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments
- All recorded sessions will remain within the course site or unlisted if streamed

Remote learning sessions for this course may be recorded.

Occasionally, I use remote learning technology (e.g. Zoom) for Student Hours or other purposes; these learning sessions may be recorded by the instructor. The data captured during these recordings may include your image, voice recordings, chat logs, and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

Copyright Statement

Please be aware that all course materials created by the instructor(s) are copyrighted and cannot be **sold/shared**. Those include materials used in lectures, labs, tests/quizzes, assignments, midterms, activities, and finals. Any posting/sharing of such materials in part or whole without owner's consent is considered as violation of the Copyright Act and will be considered as a scholastic offence.

In addition, online services such as Chegg are actively monitored. Any questions that are coming out during midterms and finals and are posted to an online service will be searched. Such an activity will be considered as a scholastic offence and will result in academic penalty.

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.

Learning-skills counsellors at the Learning Development and Success (<http://www.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.

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