Department of Biology *and*
Department of Statistical & Actuarial Sciences

Biology/Statistics 2244B – "Statistics for Science"

Course outline for Summer Distance 2024 (term 1245)

*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 2244AB, sections 650, SU24

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 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 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 in the event that you are dropped from a course for failing to have the necessary prerequisites.

Land Acknowledgement

Some of my core teaching practices and values stem from opportunities I have had to learn from, and work alongside, diverse Indigenous peoples. Currently, I am reflecting on the nature of knowledge, and how students of statistics would benefit from *Etuaptmumk*[1]. Given the influence that Indigenous peoples have on my teaching, 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 of our society.

[1] Etuaptmumk is a Mi'kmaw word meaning "Two-eyed Seeing", a concept developed by Mi'kmaq Elder Albert Marshall; https://www.2eyedseeing.ca/about-5

Important Dates

Classes Start	Add deadline	Drop Deadline*	Classes End	Exam Period
June 17	June 21	July 15	July 26	July 29-Aug 1

*Last day to withdraw from a 6-week second-term half course, resulting in a grade of WDN (withdrawn, without academic penalty).

Instructor Information

Course Instructor

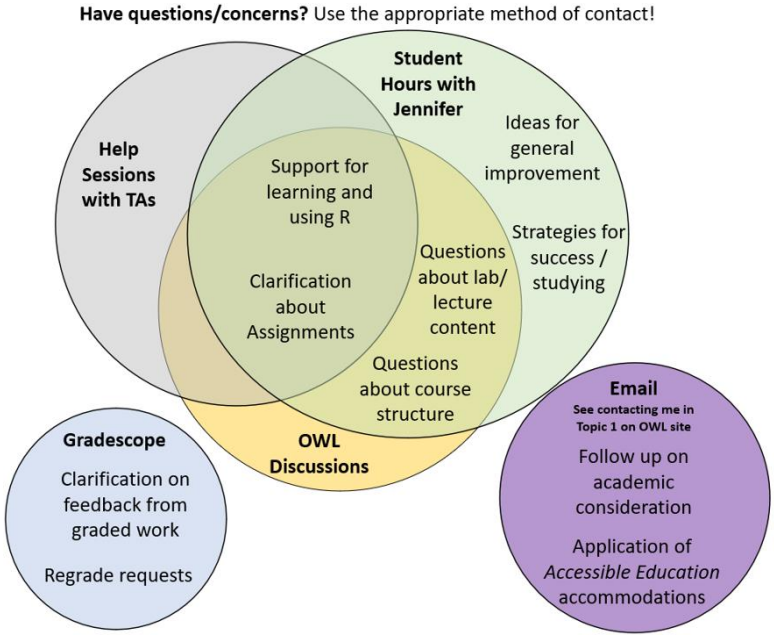
Jennifer Peter (she/her)

Contact Information

Email is used in a VERY restricted and limited manner in 2244. Email should only be used for discussions about academic consideration and accommodations. All other types of questions should use a method as described in the picture to the right. **Emails MUST have "2244B"** at the **start** of the subject line or they will not receive a response.

Response time:

At busy times, I 'triage' questions; for example, I will prioritize answering questions that relate to assignments with upcoming deadlines, and delay—if necessary—responses to requests that are not as time sensitive (based on my experience). For efficiency, I also use class-wide or group announcements to reply when deemed appropriate. So, please be patient with my response time, and watch for a response that could either be direct or via a larger (albeit, confidential) group response.



Timing of **Student Hours with Jennifer** (drop-in times to get support and ask questions), and **Help Sessions with TAs** (to get clarification on assignments and troubleshooting with lab content) will be organized during the first week of the course. These sessions will always have an online-access option (e.g. Zoom).

Methods of communication

To ensure your questions/concerns are addressed properly, please note the following:

- Regrade requests MUST be sent **through Gradescope within one week** after grading is returned; such requests sent through any other means will NOT be addressed; this is an efficiency and organizational choice.
- Questions about course content should be made on the OWL Discussions and/or during scheduled Student Hours.

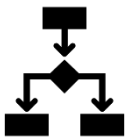
Course Schedule and Delivery Mode

Universal Design for Learning

UDL

This course has been designed with principles of **Universal Design for Learning** (UDL), which "focuses on eliminating barriers through initial designs that consider the needs of diverse people"[2]. You will encounter a combination of in-person, 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; deadlines with automatic grace periods; and alternative course weighting schemes that acknowledge that mastery may occur at individualized rates.

Delivery of course material



This course is timetabled as a **distance course**; this means that the course content is delivered online. Specific to Biol/Stat 2244, *lecture AND lab content* is delivered asynchronously online. Therefore, having a reliable internet connection, and, ideally, dedicated access to a laptop or desktop computer is required to be successful. The only in-person component of the course will be the Final Exam. Should any university-declared emergency require the Final Exam to be conducted online, the course will be adapted accordingly. The grading scheme will **not** change.

Timetable and Schedule

Lecture and lab content is entirely online and asynchronous. You are responsible for setting your own schedule to complete the content; a suggested timeline for completing individual lecture 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 suggested practice and review.

Week	**Lecture/Lab Topics**	**Assessments due Fridays, 11:55 pm** (plus 48-h grace period)	**Exams**
June 17-23	Understanding 2244 PPDAC: A scientific inquiry framework Sampling designs & considerations **Labs:** Setting up R & R Studio/Working with data	**Activity 1**	
June 24-30	Study designs & considerations Data structure and planning analysis **Lab**: Reproducible files using R markdown	**Assignment 1**: *Problem & Plan* **Activity 2**	
July 1-7	Summarizing & Exploring Data Sampling distributions of estimators **Lab:** Summarizing & Visualizing Data in R		**Midterm:** **S**un, July 7 6:00 pm - 8:00 pm
July 8-14	Understanding confidence intervals Understanding hypothesis testing	**Assignment 2:** *Data* **Activity 3**	**Makeup midterm** Fri, July 12 10:00 am - 12:00 pm
July 14-21	t confidence interval (CI) & test for the mean large sample CI & test for proportion t CI & test for difference in means **Labs:** one and two sample procedures in R	**Activity 4**	
July 21-28	Simple linear regression One-factor ANOVA **Labs:** Linear regression and ANOVA in R	**Assignment 3:** *Analysis & Conclusion* **Activity 5**	
July 29-Aug 1	**Final Exam Period** ***Do not schedule travel until the Final Exam schedule has been posted (expected July 3)***		

[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.

Learning Outcomes

This course is designed to ***demonstrate that statistics is a scientific discipline that should inform research at all stages***, from problem definition through data interpretation and conclusion. Consequently, the course topics are organized around the PPDAC framework for scientific inquiry[3], focusing on applying knowledge relevant to questions that researchers should consider at each stage of the research process. By the end of the course, therefore, a successful student will have demonstrated proficiency with a majority of the following learning outcomes:

Design sampling and study procedures to collect relevant data addressing a research question	• Recognize and design common sampling and study design methods • Identify issues with sampling and study designs (e.g. bias, undercoverage, confounding, control, reproducibility) • Identify potential inference procedures and/or models based on research goal and data structure
Create and interpret appropriate summaries of data	• Select appropriate summaries based on research question and variables • Interpret common graphical and numerical summaries to describe patterns and features of univariate, bivariate, and/or multivariate data
Analyse data using inference procedures to address a research question	• Identify data structure characteristics (e.g. number of comparison groups, type of variables, paired vs. independent samples, etc.) • Interpret and describe confidence intervals and P-values • Evaluate model diagnostics for common parametric inference procedures
Use statistical software to summarize, analyse, interpret, and communicate data in a reproducible manner	• Create graphical and numerical summaries of data in R • Conduct inference procedures, including model diagnostics in R • Interpret R (or other statistical software) output • Create reproducible analyses using R markdown and LaTeX
Communicate statistical concepts, analyses, and arguments in an accurate and scholarly manner	• Describe statistical concepts, procedures, and ideas with appropriate vocabulary • Use conventional formats for reporting results of statistical analyses • Justify choices of statistical procedures (e.g. selected study designs), prioritizing data quality and generalizability
Describe models and/or conceptual background for common inference procedures	• Describe characteristics of Binomial and Normal probability distributions • Describe the models for common inference procedures • Explain the role of sampling distributions and estimators for inference

[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.

The OWL Brightspace site, **STATS 2244B 650: Statistics for Science** is used heavily; students are responsible for checking the site on a regular basis. It provides:

- Lecture and lab materials
- Assessment instructions and materials
- Practice questions
- Communication tools (Discussions, Announcements)
- Calendar of due dates and help sessions

The **Lab** component of the course requires 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 download to your personal computer (*best experience*) or for limited use through a browser (*if necessary*). Instructions for downloading/accessing R and R Studio is on the OWL site as part of Lab 1.

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). Google Chrome or Mozilla Firefox are the preferred browsers to optimally use OWL and our course materials. Ensure your browser is up-to-date.

Methods of Evaluation

This course uses ***Specifications Grading*** for some elements; 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 for particular 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 more about "Specs Grading" in general, there's a great blog post about it available here.

Overview of Grading Distribution

The evaluation in this course is set up to recognize mastery of the majority of the material/skills *by the end* of the course, and to provide some opportunities to learn from mistakes; to do so, I use a flexible evaluation scheme. There are four (4) different types of assessment you will encounter: Assignments, Activities, the Midterm, and the Final Exam. The baseline distribution of 'weight' for each of these components is described below. Three alternative weighting schemes are provided. **In all cases, your final course grade will automatically be calculated to give you the highest possible course mark at the end of the course.**

Component	Baseline	Alternative 1	Alternative 2	Alternative 3
Assignments	**40%**	40%	40%	40%
Activities	**15%**	15%	5%	5%
Midterm	**15%**	5%	15%	5%
Final Exam	**30%**	40%	40%	50%

Essential Requirements to pass Biol/Stat 2244

There are TWO (2) criteria that must be met for a student to be *eligible* to earn a passing grade (i.e. 50% or more) in Biology/Statistics 2244. These are:

- earning at least 20% for the Assignments component (achieved as described below), **AND**,
- earning at least 40% on the Final Exam.

Failing to meet either and/or both of these two criteria will result in **a final course grade of 40%** (or your actual computed grade, whichever is lower) being assigned, regardless of your achievements on other components of the course.

Determining your *Assignments* Component

The *Assignments* component of your overall course grade is based on achievement across three important (3*) Assignments*. Each *Assignment* evaluates your achievement of a subset of three (3) course-level learning outcomes (see page 4); your achievement of each outcome is graded against a 4-level rubric using **M** = Mastery (highest level), **P** = Proficiency, **A** = Approaching proficiency, **N** = Not met (lowest level); the specifics of the rubric and expectations for each level are provided with each Assignment's instructions. The number of **M**, **P**, **A**, and **N** levels you achieve across the three Assignments determines 40% of your course grade; your grade out of 40% will be based on the highest 'bundle' of accomplishments that you fulfill ***in its entirety***, as described in the following table. Note that there are no intermediate levels (for example, no possibility to obtain 36%).

To earn:	Achieve ALL of the following specifications:
40	• submit all 3 Assignments • earn level **M** across all Assignment learning outcomes
38	• submit all **3** Assignments • earn **8** level **M** and no level **A** or **N** across the Assignment learning outcomes.
35	• submit all **3** Assignments • earn at least **6** level **M**, no more than **1** level **A**, and no level **N** across the Assignment learning outcomes
30	• submit all **3** Assignments • earn at least **5** level **P**, no more than **2** level **A** and no more than 1 level **N** across the Assignment learning outcomes
25	• submit all **3** Assignments • earn at least **5** level **P**, no more than **3** level **A** and no more than **1** level **N** across the Assignment learning outcomes
20	• submit all **3** Assignments • earn at least **5** level **P** and no more than **2** level **N** across the Assignment learning outcomes

Determining your *Midterm* and *Final Exam* Components

Both the Midterm and Final Exam are graded on a traditional points-based scale. Consequently, your grade for each will be calculated according to the following formula:

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

For example, if a student earns 22 out of a possible 30 points on the Midterm, then their Midterm component (15%, based on the Baseline distribution from page 5) will be (22/30) x 15% = 11%.

Determining your *Activities* Component

The *Activities* component of your overall course grade is based on achievement on a set of five (5) Activities. These Activities are graded on a 3-level rubric using **F** = Full credit (highest level), **P** = Partial credit, and **N** = No credit/Not submitted (lowest level). The specifications for this rubric and the levels will be provided with each Activity's instructions. The number of **F**, **P**, and **N** levels you achieve determines the Activities component of your grade. The final Activities component out of 15% (as per the 'Baseline' grading distribution from page 5) will be based on the highest 'bundle' of accomplishments that you fulfill in its entirety, as described in the following table:

To earn:	Achieve ALL of the following specifications:
15%	• submit all **5** Activities • earn at least **4** level F and no level **N**
12%	• Submit at least **4** Activities • Earn at least **3** level **F** and no more than one level **N**
9%	• Submit at least **4** Activities • Earn at least **2** level **F** and no more than one level **N**
6%	• Submit at least **3** Activities • Earn at least **3** level **P** across the submitted Activities
3%	• Submit at least **2** Activities • Earn 1 level **F AND** 1 level **P** across the submitted Activities

For the Alternative 2 or Alternative 3 grading distribution (see page 6) where Activities are worth 5% total, the value out of 15% earned from the above table will be rescaled out of 5%. For example, a student who would have earned the 12% bundle would earn 12/15 x 5% = 4% out of the possible 5% under the Alternative 2 or Alternative 3 grading distribution.

Failing to meet the specifications for the lowest (3%) level for Activities will simply result in an *Activities* component of 0 out of the possible 15%. Note that there are no intermediate levels (for example, no possibility to obtain 14%).

Assessment Descriptions

There are four (4) types of Assessment used in this course. Each will be described briefly in this section; more comprehensive details will be provided for each assessment on the OWL course site, under Assessments→Assignments.

Activities.

WHY? The *Activities* are created to (i) encourage timely completion of the lecture and lab content, (ii) represent stepping points towards the type of skills/knowledge tested on Assignments and/or Exams, and (iii) provide low-stakes opportunities for feedback on your understanding and application of course content.

WHAT? There are five (5) *Activities* planned for the course. The Activities are graded on 3-level rubric that will be provided with the *Activity* instructions. Generally, the Activities focus on applications of concepts or skills recently covered in the lecture and/or lab materials and will involve answering a handful of questions (typically multiple choice, short answer, and possibly file/image uploads).

HOW? The method of completion and submission varies depending on the particular *Activity*. All Activities will have instructions provided through the OWL Assessments/Assignments, with corresponding access to the Gradescope.ca submission.

Assignments.

WHY? The *Assignments* are created to assess your level of achievement on a core subset of course-learning outcomes (see **page 4** in this syllabus) in an authentic manner, including your use of the statistical software, R.

WHAT? There are three (3) *Assignments*, each composed of a couple short answer questions requiring written responses (possibly including graphs/tables and/or R code and output). The *Assignments* move progressively through the stages of the PPDAC framework[4], and involve answering questions that relate to an overall research objective and set of related research questions. Each Assignment will address a subset of three (3) of the course-level learning outcomes; each learning outcome will be graded on a 4-level rubric, which will be provided in the *Assignment* instructions.

HOW? All assignments must be completed in an R markdown file (.RMD) and knitted, with the knitted file saved to PDF format for submission [5] . All Assignments must be uploaded to the OWL Assessments/Assignments, AND to the corresponding Gradescope.ca submission.

Midterm.

WHY? The *Midterm* serves as an important opportunity to demonstrate your understanding, application, and integration of the course material from the half (roughly) of the course.

WHAT? The *Midterm* will be composed of several short answer questions and possibly some multiple-choice questions; questions may involve calculations, drawings, etc. The *Midterm* is open-book. The *Midterm* will be graded using a traditional points-based system (e.g. x / 20 points achieved). Details on coverage and exact structure will be provided through OWL Assessments/Assignments closer to the Midterm date.

HOW? The *Midterm* will be synchronously online through OWL and Gradescope at the scheduled time/date.

Final Exam.

WHY? The *Final Exam* serves as an important opportunity to demonstrate your understanding, application, and integration of the course material at the end of the course, including some application of the skills/concepts associated with the statistical software, R.

WHAT? A **cumulative** exam with a combination of multiple choice and short answer questions, which may involve calculations, drawings, and interpretation of data. 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.). The *Final Exam* will be graded using a traditional points-based system (e.g. x / 20 points achieved).

HOW? The *Final Exam* will be written on paper and take place in-person, on campus, at a time/location scheduled by the University Registrar. More details will be posted on OWL Assessments/Assignments once the exam date and time is assigned.

2244 Policy on use of Artificial Intelligence generative tools

Artificial Intelligence (AI) tools (i.e. large language models, natural language processing applications, chatbots; e.g. ChatGPT, DALL-E 2, Sudowrit, Grammarly, etc., etc.) are now widely accessible to the general public. Discussions have been prolific in post-secondary education about how and why such AI tools should/shouldn't be used in academia. Suffice to say, there is little agreement and still a lot to learn. Based on current state of knowledge and relevance to THIS course (i.e. where transparency and reproducibility of data 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—which includes a discussion of the philosophy behind the policy, and the concerns about the accuracy, bias, and transparency of AI tools—, that is available on the OWL course site as part of Topic 1: Introduction to 2244.** If any part of this policy is confusing or uncertain, please reach out to me for a conversation before submitting your work. Note that violations of this policy are considered

[4] Mackay, R.J., and R.W. Oldford. 2000. Scientific method, statistical method, and the speed of light. Statistical Science 15(3): 254-278.
[5] You will learn about R markdown files and 'knitting' in Lab 3.

violations of Western's academic integrity and scholastic offense policies. An 'executive summary' of the policy is provided here:

1. Any assessments that were created with the help of AI tools (at any point in completing the assessment) should clearly indicate (by descriptive narrative) what work/ideas are yours and what content/ideas were generated by the AI tool. You must also cite the tool(s) used. For example, if using ChatGPT-4, you would cite using a format such as: "*ChatGPT-4. (YYYY, Month DD of query). "Text of your query." Generated using OpenAI. https://chat.openai.com/*".
2. In cases where AI tools are used, no more than 25% of the submitted work should be generated by AI.
3. Keep transcripts of your "conversations" (prompts plus responses) as documentation/support of your use. A simple approach to take is to use screenshots.

Accommodated Evaluations

All *Assignment and Activity* deadlines have an automatic 48-h 'grace period'. If you are unable to submit by the Friday at 11:55 pm EST deadline), you *automatically* have an additional 48-h period during which you can submit the assessment **without** requiring any academic consideration from Academic Counseling, or permission from the instructor, and **without any late penalty**. There is no limit on the number of assessments for which you 'use' the 48-h grace period. So, if you need some or all of that extra 48 hours to get the assessment(s) submitted properly, simply take it—no questions asked. Beyond that 48-h grace period, late Activities *without* academic consideration will not be accepted. **Late Assignments will be accepted up to three days *after the end* of the 48-h grace period, but will incur a substantial late penalty** (the nature of the late penalty is described in the instructions for each *Assignment*). Late Assignments will NOT be accepted more than three days after the end of the 48-h grace period unless academic consideration is obtained.

Note that the 48-h grace period does NOT apply to the *Midterm* or the *Final Exam*.

To obtain academic consideration for missed Assignments, Activities, or the Midterm (or for requests to submit Assignments or Activities beyond the 48-h 'grace period' without late penalty), you must provide valid medical or supporting documentation to the Academic Counseling Office of your Faculty of Registration as soon as possible (for Faculty of Science students, see https://www.uwo.ca/sci/counselling/advising_services/index.html). For further information, please consult the University's medical illness policy at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf . The Student Medical Certificate is available at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

How academic consideration from Academic Counseling is handled depends on the assessment item being accommodated, as described below:

- ***Assignments*** granted an extended deadline consideration through Academic Counseling (i.e. beyond the 48-h grace period) should be discussed with your instructor via an email to jwaugh2@uwo.ca **with subject line starting with "2244B"** as soon as possible to identify a suitable deadline. *It is in your best interest to work on the Assignment (if capable of doing so) while the request for academic consideration is being evaluated by Counselling or while waiting for a new deadline from the instructor*. If the Assignment cannot be submitted prior to the date that the graded Assignment (or a solutions file) is returned to the rest of the class, then an INC will be issued for the course grade. The missed Assignment will be completed the next time the course is offered or at a time arranged between the student and instructor.
- ***Activities*** granted an extended deadline consideration through Academic Counseling (i.e. beyond the 48-h grace period) should be submitted prior to the feedback for the Activity being returned to the class. If the Activity cannot be submitted before that time, you may be asked to complete an alternative version of the Activity, or, a rescaling of the Activities component grading scheme may occur, at the discretion of the instructor.
- There will be one make-up ***Midterm*** for students who have obtained academic consideration through Academic Counseling for missing the original *Midterm*. Students who are scheduled to write the make-

up *Midterm*, but cannot due to conflict or other circumstances that are accommodated by Academic Counseling will have their *Final Exam* reweighted accordingly.

Note: missed/late work will *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement (i.e. Final Exam) due to potential COVID-19 symptoms is not sufficient on its own. I will also not grant extended deadlines, etc. without academic consideration supported by Academic Counseling; this policy is to prevent the exacerbation of inequities that might already exist among students.

Click here for a detailed and comprehensive set of policies and regulations concerning examinations and grading.

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. The mark attained is the mark you achieved, and the mark assigned; 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

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

Religious Accommodation

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

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examinations).

Academic Policies

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 their 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.

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.

Personal response devices ("clickers") or similar technology may be used in this course for the purpose of engagement during in-person learning and/or to provide informal feedback to your instructor about student understanding. Such technology use will not contribute to course grades. Any personal data collected (e.g. student usernames/identification and responses to questions) will be treated like other confidential course-related data.

In the event of a university-declared emergency that requires some or all of the course to be delivered online, tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course would, consequently, require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: https://remoteproctoring.uwo.ca.

Professionalism & Privacy

Western students are expected to follow the Student Code of Conduct. Additionally, the following expectations and professional conduct apply to this course:

- ✓ Students are expected to follow online etiquette expectations provided on OWL
- ✓ All course materials created by the instructor(s) are copyrighted and cannot be sold/ shared
- ✓ Recordings are not permitted (audio or video) without explicit permission
- ✓ Permitted recordings are not to be distributed
- ✓ 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 may use remote learning technology (e.g. Zoom) for Student Hours or other purposes; these learning sessions may be recorded. 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 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 http://academicsupport.uwo.ca/accessible_education/index.html if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (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.

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.

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