

Statistical Sciences 1023A | 2037A – Section 001
Statistical Concepts

Instructor: Dr. Tyler Pattenden (he/they)
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Class Time: Monday, Wednesday and Friday – 11:30AM to 12:20PM (EST)
Class Location: BGSB-0165
Student Hours: TBD (see note below)

Course Description:

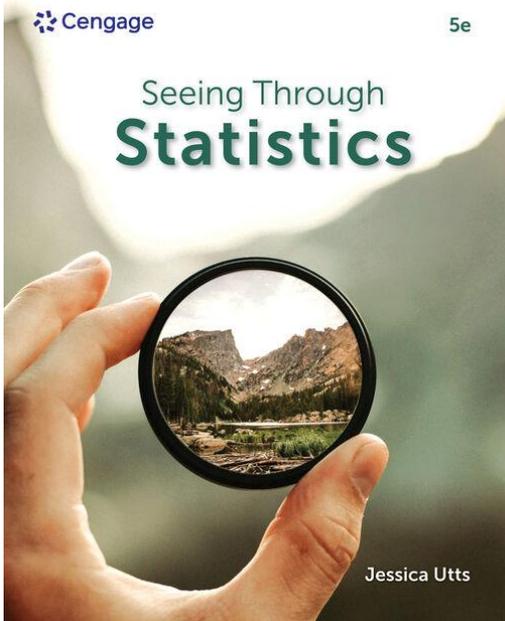
An examination of statistical issues aiming towards statistical literacy and appropriate interpretation of statistical information. Common misconceptions will be targeted. Assessment of the validity and treatment of results in popular and scientific media. Conceptual consideration of study design, numerical and graphical data summaries, probability, sampling variability, confidence intervals and hypothesis tests.

Prerequisites:
None.

Antirequisites:

Data Science 1000A/B, Statistical Sciences 2244A/B, Biology 2244A/B, Statistical Sciences 2037A/B

Course Materials:



The textbook we will be using this term is:

Seeing Through Statistics (5e.) by Jessica M. Utts.
(ISBN-13: 978-0-357-75750-5)

There are two options to purchase the textbook – eBook or hard copy. You may choose either option. The textbook (in either form) may be purchased through the Western Bookstore (<https://bookstore.uwo.ca>).

Please note that if you purchase a previous edition of the text, the instructor warns that there are small changes between versions that may not be known by the instructor. Some sections may differ, some homework problems may differ. Buy previous versions at your own risk!

Important websites and their utilization in this course:



OWL Brightspace – This learning management system will be your hub to find all posted resources for this course. This will include lecture notes, additional resources for the week (videos, extra notes, activities) and your grades! Announcements will also be sent out via OWL Brightspace for reminders regarding upcoming assessments and any pertinent information regarding the course. It is your responsibility to check OWL often (daily!!).



iClicker – Clickers will be used as a tool for active learning and in-class participation (i.e., attendance checking). They allow students to answer questions during lectures using your cell phone, tablet or laptop. They will allow the instructor to instantly gauge understanding of course content and will help us monitor your understanding. Instructions for creating an iClicker account and signing in will be posted on OWL Brightspace. Students can use this software for free through UWO's license.



Gradescope – This will be our grading platform for major summative assessments for this semester. Your two term tests and final examination will be scanned into Gradescope for instant feedback and grading purposes. Note that assessments *may* be released to you at the discretion of the course coordinator / instructor. You may need to schedule an appointment with your instructor to view your work directly.

- Gradescope works best when you upload a PNG or PDF file as your submission. Other file formats risk being corrupted or unseen by the grader.
- We will be using gradescope.ca in this course – please ensure you are going to this website and not gradescope.com!!

Email and Communication Policy:

The best method to contact your instructor for this course is in-person before or after class. If this does not work for you, then you can email your instructor. All emails **MUST** be sent through your official UWO email address (username@uwo.ca) so it does not end up in spam. The subject line of your email must include the course number (i.e., **STATS 1023**). I will endeavour to respond to your emails within 2 business days.

Brightspace also provides Discussion Boards where a few forums will be set up for you to post and ask questions. The instructor will only respond after 24 hours, allowing time for peer-to-peer communication.

Email communication should be reserved only to provide information or ask a question that requires a brief response. Any questions asked via email that have been answered in this outline or on the course website (Brightspace) will **not** be responded to. It is your responsibility to seek the information to the best of your ability before emailing your instructor.

Mathematical questions will not be answered via email. You must speak directly to your instructor to have these answered.

Please note that emails or forum questions may not be answered within 12 hours of any summative assessment (test or exam).

Learning Outcomes:

By the end of the course, students will be able to:

1. Understand and correctly use foundational vocabulary associated with statistics;
 2. Interpret, create and critically evaluate graphical and numerical summaries;
 3. Understand and appreciate probability, chance, randomness and average;
 4. Understand, assess, and critique the validity of conclusions of statistical studies;
 5. Critically evaluate statistical information presented in the media and society; and
 6. Apply concepts learned in this course to future courses, careers and everyday life.
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Evaluation:

Your final grade will be calculated through the following scheme:

Assignments (throughout term; 4 total)	4 x 5% = 20%
Term Test #1 (October 10 th from 7:00PM to 9:00PM)	15%
Term Test #2 (November 14 th from 7:00PM to 9:00PM)	15%
Final Examination (to be scheduled by the Registrar)	45%
Test Flex Grade (added to best test)	5%

Details regarding each evaluation are given below.

Assignments:

Assignments are meant to be completed individually, and will be submitted through Gradescope by the due date provided in the course schedule at the end of this outline (note that dates are tentative and may change – always check Brightspace for updates). Assignments are meant to check your conceptual and mathematical knowledge of content taught in-class and in the textbook. Assignments will always contain ten (10) questions. When submitting your assignment on Gradescope, you **must** assign questions to their corresponding pages. Questions with no pages assigned to them will receive zero points. Instructions on how to properly upload a PDF document to Gradescope have been provided on Brightspace. All assignments are equally weighted at 5% each. Full solutions will not be provided to assignments. Assignments that are up to 24 hours late will receive a deduction of 15% on their total unless late coupons are used. Late assignments up to 48 hours late will receive a deduction of 30% on their mark unless late coupons are used. No extensions will be given beyond 48 hours.

Each student will receive **two (2) late coupons** worth 24 hours each that they can use at their own discretion for whatever reason (i.e., I do not need to know the reason) towards assignments. You can use them together on one assignment for a 48-hour extension or on two separate assignments for a 24-hour extension. No extensions will be given for any reason beyond the use of late coupons; therefore, **I suggest saving them until you absolutely need them**. You do not need to tell me when you will use the coupons – they will automatically come off the first two late days.

Term Tests:

There are two term test scheduled for two hours on the dates below. Topics for each test will be announced in advance through Brightspace and in class. The format of the tests will be a combination of multiple choice and short written answer questions. There will be no make-up term tests. If you miss a term test, you must request appropriate accommodation from Academic Counselling in your Faculty's Dean's Office. Student who obtains appropriate accommodation will have the weight of the missed term test redistributed to the final exam.

The term test dates are:

- Term Test #1 – Friday, October 10th, 2025 from 7:00PM to 9:00PM
- Term Test #2 – Friday, November 14th, 2025 from 7:00PM to 9:00PM

Room assignments will be posted on Brightspace prior to the term tests. You will be allowed to bring a non-programmable hand-held calculator and one single-sided, letter-sized, handwritten cheat sheet. Handwritten means pen to paper, no printing from a computer of any kind, or any photocopying.

Final Examination:

The final examination will be a three-hour cumulative examination that may be a combination of multiple choice and short written answer questions. The final examination will be scheduled by the Registrar during the final examination period. As with the term tests, you are allowed to bring a non-programmable hand-held calculator and one single-sided, letter-sized, handwritten cheat sheet. Handwritten means pen to paper, no printing from a computer of any kind, or any photocopying.

Test Flex Grade:

A 5% flex grade will be applied to whichever summative assessment (term test or final examination) that you score best on.

IMPORTANT – We will be using iClicker simply as a check of understanding. There are no participation marks or any points assigned to your use of iClicker.

In-Class Notes:

All in-class notes will be posted to OWL within 48 hours of class ending – I will do my best to post within 24 hours, but may be delayed on occasion. Note that if attendance in class begins to lack, notes may be password protected with the password given only to those that attend class. It is extremely important that you attend class, participate, ask questions, and be present in all aspects of the word. **I do not want to password protect notes, but will do so if needed.**

Student Hours:

Some professors may call this time each week “office hours”, but I cannot stand that term as it makes it sound like I do not want you around. In fact, these hours are scheduled for you to come see me (I know a scary thought, right?). I will be sitting, more than likely alone, somewhere on campus (TBD) awaiting you to grace me with your presence. This is your time to speak with me (your oh so scary instructor) about course content, future directions, life, Netflix or whatever. Student hours will occur in-person somewhere on campus. If you are unable to attend student hours, please email me to schedule an appointment.

Course Policy on Use of Artificial Intelligence (AI):

Within this course, use of artificial intelligence (AI) tools such as Chat GPT is not permitted for tests and exams submitted for evaluation. Unauthorized use of AI will be subject to academic discipline. The use of AI for some questions on assignments may be permitted; when this is the case, the question will be clearly marked with **(AI)**. Whenever this is the case, you are expected to include a screengrab of your prompt and the output of the AI tool. Any questions not marked with **(AI)** are expected to be completed without the use of such tools.

Please note that instructor reserves the right to seek additional clarification about any submitted work (e.g., explain a solution) as part of any test or exam, including any multiple-choice tests.

Equal Opportunity and Evaluation Policy:

The university is committed to academic integrity and has high ethical and moral standards. All students will be treated equally and evaluated using the criteria presented in this course outline and their respective weights. The evaluation criteria are based strictly on actual achievement, not on effort. Claims of an excellent academic history, of attendance in the course components, or of personal issues (family, relationship, financial, etc.) cannot be used to justify a higher grade in the course because they are not criteria for evaluation. The requirement for a higher grade to, for example, maintain a scholarship, enter a program, or obtain a higher GPA for various reasons, is not a justifiable reason for increasing your grade. If we increased or “bumped” your grade (i.e. gave you a grade that you did not legitimately earn), it would be unfair to the other students and also a great disservice to the scholarships and programs who are evaluating all students on the basis of their grades. This means, for example, if you receive 58% in the course we will not “bump” your grade to a 60%; you will simply need to take the course again if you need 60%.

Accommodation and Accessibility:

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](#). 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:

- Final exam (by policy)
- Students are allowed to submit an Academic Consideration request without supporting documentation for one (but not both) term tests.

When a student *mistakenly* submits their one allowed Academic Consideration request without supporting documentation for the assessments listed above or those in the section below, the request cannot be recalled or reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments:

- Assignments
 - Further accommodation beyond late coupons and late penalty must be approved via the Dean's Office/ Academic Counselling unit of your Home Faculty. Students who obtain appropriate accommodation will have the weight of the missed assignment distributed to further assessments.
 - Term Tests
 - There will be no make-ups exam for term tests. If you miss a test, you must request accommodation from Academic Counselling in your Faculty's Dean's Office. Students who obtain appropriate accommodation will have the weight of the missed midterm redistributed to the final exam.
 - Final Exam
 - If you miss the Final Exam you must request accommodation from Academic Counselling in your Faculty's Dean's Office and contact the instructor immediately. Students with appropriate accommodation 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.
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EDID Statement:

I am committed to having a respectful classroom where all feel welcomed. Our class time is a safe space to be yourself, and to question the course content. Discussion is always encouraged, and you should never feel silenced by me or a peer. We all come from different backgrounds, and that is what makes science (and the world!) an amazing place. If you ever feel disrespected, put down, or not included for whatever reason, please reach out to me. I will always be a safe person for you to talk to.

Decolonization Statement:

Western sits on the traditional territories of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnocton Peoples. The legacy of colonization and colonialism is felt globally and is imprinted in our educational system. Western is taking some initial steps toward recognizing it. Textbooks can be biased toward a particular cultural narrative. Science (especially Statistics and Mathematics) textbooks are no exception. I will strive to include unique content as much as I can, and I seek your feedback.

Additional Statements:

Religious Accommodations

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising Office of their home Faculty. This notice should be made as early as possible, but not later than two weeks prior to writing or the examination (or one week prior to writing of the test). Please visit the Diversity Calendars posted on our EDID website for the recognized religious holidays: <https://www.edi.uwo.ca/>

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. [The policy on Academic Accommodation for Students with Disabilities can be found here.](#)

Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>. In accordance with [policy](#), 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 address is attended to in a timely manner.

Extra on Technology in the classroom

A non-programmable calculator will be allowed on the term tests and final examination. A graphing calculator will not be allowed. Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, [here](#).

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic-related matters. <https://www.uwo.ca/sci/advising/>

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

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find the information about support services for survivors, including emergency contacts at https://www.uwo.ca/health/student_support/survivor_support/get-help.html. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternative format or if any other arrangements can make this course more accessible for you. You may wish to contact Accessible Education at https://academicsupport.uwo.ca/accessible_education/index.html if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca/>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

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

Tentative Class Schedule:

This is subject to change and should not be held as absolute. All textbook sections come from Seeing Through Statistics.

Week		Chapter	Topics	Important Notes (deadlines, etc.)
1	Sept 4 - 5	Chapter 1	<ul style="list-style-type: none"> • Introduction to course • Statistics 	Classes begin on September 5 th !
2	Sept 8 – 12	Chapter 2	<ul style="list-style-type: none"> • Statistics in the News • Seven critical components 	
3	Sept 15 - 19	Chapter 3	<ul style="list-style-type: none"> • Measurement bias • Vocabulary 	
4	Sept 22 – 26	Chapters 4 & 5	<ul style="list-style-type: none"> • Sampling strategies • Study design 	Assignment #1 due on Friday, September 26
5	Sept 29 – Oct 3	Chapter 7	<ul style="list-style-type: none"> • Summarizing data • Five-number summary • Boxplots and histograms 	No classes on September 30 th (National Day for Truth and Reconciliation)
6	Oct 6 - 10	Chapter 8	<ul style="list-style-type: none"> • Normal distribution and standardized scores • Applying the empirical rule 	<p>Term Test #1 on Friday, October 10th from 7PM -9PM (to be confirmed)</p> <p>Assignment #2 due on Friday, October 10</p>
7	Oct 13 - 17	Chapter 9	<ul style="list-style-type: none"> • Misleading graphs 	No classes on October 13 th (Thanksgiving)
8	Oct 20 - 24	Chapters 10 & 11	<ul style="list-style-type: none"> • Relationships between variables • Correlation coefficient and linear regression models 	
9	Oct - 31	Chapter 12	<ul style="list-style-type: none"> • Relationships between qualitative variables • Contingency tables and odds ratio • Relative risk 	Assignment #3 due on Friday, October 31
10	Nov 3 – 7	--	--	Fall Reading Week

11	Nov 10 – 14	Chapter 13	<ul style="list-style-type: none"> Statistical significance for 2 by 2 tables 	Term Test #2 on Friday, November 14 th from 7PM - 9PM (to be confirmed)
12	Nov 17 – 21	Chapters 14 & 19	<ul style="list-style-type: none"> Understanding probability Introduction to inference: sampling variability and sampling distributions 	
13	Nov 24 – 28	Chapters 20 & 22	<ul style="list-style-type: none"> Confidence intervals Hypothesis testing 	
14	Dec 1 – Dec 5	Chapter 23	<ul style="list-style-type: none"> More on hypothesis testing 	Assignment #4 due on Friday, December 5
15	Dec 8 – 9	Review Class?		Classes end on December 9 th
	Dec 11 th to Dec 22 nd	-- no class --	-- no class --	Final Examination Period