

Winter 2019

Statistical Science 1024A - Introduction to Statistics
Section 001**Instructor Information**

Instructor	Dr. Azaz Sharif
Email	asharif@stats.uwo.ca
Office Hours	Mon, Wed from 3:00 pm to 4:00 pm at WSC#105, OR, by appointment ** Any changes to these hours will be announced in class and posted under Announcements on our OWL site.

Course Information

Course Description	Statistical inference, experimental design, sampling design, confidence intervals and hypothesis tests for means and proportions, regression and correlation.
Prerequisites	Grade 12U Mathematics or Mathematics 0110A/B or 1229A/B, Grade 12U Mathematics or Mathematics 0110A/B or 1229A/B, or the former Mathematics 017A/B. In case of conflict or questions, consult the Academic Counselling Office of your home department.
Antirequisites	All other courses or half courses in Introductory Statistics, except Statistical Sciences 1023A/B and 2037A/B. For a full list of Introductory Statistics courses, see http://westerncalendar.uwo.ca/2017/pg1590.html . You cannot take a listed anti-requisite course concurrently with Statistical Sciences 1024A/B. If you do, you will lose credit for that course without reimbursement.
Pre, Co-requisites Warning	Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. You can be deregistered at any time even after writing the final exam. 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.
Textbook	The customized version of Basic Practice of Statistics (8 th ed.), Moore, Notz, and Fligner. The customized textbook includes a subscription to Sapling. Sapling is an optional online system that can be used as an extra resource as you take this course. This supplement includes resources (i.e., supplementary videos, online applets, tutorials and extra practice problems) that will be particularly useful for any concepts you find challenging.
Lecture Hours	Section 001, Tues: 8:30 to 9:30, Thurs: 8:30 to 10:30 am at TC#141

Course Objectives

The course provides an introduction to statistics. By the end of the course the students should have a basic understanding of:

1. The techniques used in exploring, organizing and describing data;
2. Producing data through surveys and experiments;
3. General rules of probability;
4. Statistical inference; including confidence interval construction and hypothesis tests.

Students should check OWL (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

Assessments

The overall course grade will be calculated as listed below:

Participation (Clickers)	10%
In-class Quizzes (best 4 of 5)	10%
Midterm – Saturday, March 2	30%
Final Exam	50%

Recommended Textbook Exercises

A schedule of topics and recommended textbook exercises from the 8th edition of the textbook is provided in this course outline (see below). Student's homework solutions are not to be handed in. However, working on these problems regularly and diligently is essential to success in the course. In addition to the posted list of homework problems, you are strongly encouraged to attempt additional problems for extra practice.

Clickers (10%)

Clickers are a tool for active learning and will be used in class for participation assessment. The clickers allow students to answer questions in real time using their smartphone, tablet or laptop. Clickers provide students with instant feedback on their comprehension to help them monitor their understanding of the course content. Detail instructions on how to use clickers along with creating an account will be found at <http://elearningtoolkit.uwo.ca/terms/clickers.html>.

- ◆ Anytime during the class time
- ◆ **90% legitimate attempt will award you 100% clicker marks**
- ◆ There will be trial period to make sure that clicker works

In-class Quizzes (10%)

There will be five in-class quizzes (best 4 out of 5 will be counted):

- ◆ in-class quiz 1---Tuesday Jan 22
- ◆ in-class quiz 2---Thursday Feb 7
- ◆ in-class quiz 3---Tuesday Feb 26
- ◆ in-class quiz 4---Thursday Mar 14
- ◆ in-class quiz 5---Thursday Mar 28

Each quiz will consist of 1/2 written answers questions and may have multiple parts. You will have 15 minutes to complete and submit your answers. Students are encouraged to show their works in order to receive partial marks. These are closed book quizzes, however all the necessary formulas and/or statistical tables will be provided. **Due to flexibility of the marking scheme, there will be no make-up exams for in-class quizzes.**

Checking Marked Work

In the event of a question regarding an in-class quiz mark, students are responsible for retaining and presenting any graded materials. Students have one week from the date the quiz was returned to report any apparent error in the marking and appeal their grade. No marks will be changed after that time. The instructor reserves the right to remark the entire quiz.

Midterm (30%)

There will be one multiple-choice midterm test. All tables needed and some formulas will be provided. Students will be notified in class and on OWL in advance which chapters the midterm test will be based on and the formulas that will be provided.

	Date	Time	Location
Midterm Test	Saturday, March 2, 2019	6:00 pm to 8:00 pm	TBA

Final Exam (50%)

The final exam will be a three-hour cumulative multiple-choice examination covering all material in the course. It will be scheduled in December by the Registrar's office.

Calculator Requirement

Students should bring a non-programmable calculator to the in-class quizzes, midterm test and final exam. **It is the best practice to carry a non-programmable calculator with you all time during the term.**

Department Policy on Missed Course Requirements

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in WSC 140, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

Missed Midterms: The policy of the department of Statistical and Actuarial Sciences is that there will be no make-up exams for missed midterms or tests. If recommendation for accommodation is received from your Dean's office, the weight of the missed midterm will be reassigned to the final exam. If no recommendation is received, then you will receive a mark of 0 for your midterm.

Missed Final Exam: If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a make-up Final Exam). You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

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.

Student Health and Wellness

As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (undergraduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html.

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: http://www.health.uwo.ca/mental_health/module.html. This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

Support Services

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

Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

The policy on Accommodation for Students with Disabilities can be found here:
www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

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

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

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

Accessibility

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 Services for Students with Disabilities (SSD) at 519-661-2111 ext. 82147 if you have questions regarding accommodation

Email Communication

You are welcome to communicate with your instructor by email, **but email communication should only be used to provide them with information or to ask a question that requires a brief response.** For more lengthy discussions and for discussions on lectures/course material please see your instructor during their scheduled office hours or by appointment. If you do email them, please use your UWO account, as these are often the only e-mails read.

Attendance

Classroom attendance is viewed as an important part of the learning process. Students are advised that excessive absenteeism may result in the student being disbarred from the final exam (see Western Academic Calendar).

Classroom Environment

The Department has adopted a “Mutual Expectations” policy governing the classroom environment and all work submitted by students. The full text of the policy can be found at: <https://www.uwo.ca/stats/undergraduate/mutual-expectations.html>. In summary, the policy was developed under the premise that all interactions between students and faculty should be governed by the principles of courtesy, respect and honesty.

Weekly Lecture Schedule (Approximate) Winter 2019

Week	Chapter	Topics	In-class Quizzes
Jan 7 to 11	Ch. 1 & 2	Introduction, graphs & numerical summaries	
Jan 14 to 18	Ch. 3	Normal distributions	
Jan 21 to 25	Ch. 4 & 5	Correlation and Regression	In-class Quiz 1 (Jan 22)
Jan 28 to Feb 1	Ch. 5 & 6	Regression continued, Two-way tables,	
Feb 4 to 8	Ch. 5 & 6	Producing data: Sampling & Experiments	In-class Quiz 2 (Feb 07)
Feb 11 to 15	Ch. 5 & 6	Data ethics, Probability	
Feb 18 to 22	Family Day and Spring Reading Week (No classes)		
Feb 25 to Mar 1	Ch. 8 & 9	General rules of probability, Midterm test review	In-class Quiz 3 (Feb 26)
Midterm Test Saturday, March 2 @ 6 pm to 8 pm, Location TBA			
Mar 4 to 8	Ch. 10 & 12	Sampling distribution, Basics of confidence intervals	
Mar 11 to 15	Ch. 13	Tests of significance, Inference in practice,	In-class Quiz 4 (Mar 14)
Mar 18 to 22	Ch. 14 & 15	Inference about population means	
Mar 25 to 29	Ch. 16 & 17	Inference about two population means	In-class Quiz 5 (Mar 28)
Apr 1 to 9	Ch. 21	Inference about population proportions, Final review	
Apr 11 to 30	Final examination period (scheduled by the Registrar's Office)		

Note: Quizzes, midterm test and final examination topics will be finalized and announced closer to scheduled dates.

Chapter	Recommended Textbook Exercises
1	1, 5, 11, 13, 15, 17, 24, 28, 29, 38, 40, 45
2	4, 8, 10, 12, 15, 17, 19, 21, 23, 29, 33, 36, 41, 42, 46
3	1, 3, 7, 9, 11, 13, 26, 29, 30, 35, 36, 37, 38
4	1, 3, 8, 11, 13, 21, 23, 31, 36, 39, 44
5	1, 4(a), 5, 7, 9, 16, 30, 31, 34, 35, 37, 43, 48, 52, 55, 59
6	1, 6, 18, 19, 20, 22, 24, 25, 31, 32
7	Students are advised to use as a self-review
8	1, 3, 7, 11, 24, 36, 38, 41, 43, 45, 49
9	1, 2, 4, 10, 11, 15, 16, 19, 26, 27, 28, 35, 37, 46, 47, 48
11	Students are advised to use as a self-review
12	1, 2, 5, 8, 12, 13, 15, 17, 18, 34, 36, 37, 41, 47, 48, 51, 52
13	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 27, 28, 32, 34, 38, 39
14	1, 5, 10, 12, 26, 27, 28, 29, 33, 34, 35
15	1, 5, 7, 9, 11, 12, 13, 19, 22, 23, 26, 28
16	1, 3, 6, 8, 9, 10, 15, 16, 18, 21, 23, 32, 33, 38, 39, 42, 44
17	3, 6, 8, 13, 18, 24, 34, 35, 37

18	Students are advised to use as a self-review
19	1, 2, 3, 4, 6, 7, 8, 9, 21, 23, 24, 25, 26, 31, 33, 39
20	1, 2, 3, 4, 5, 10, 12, 18, 19, 20, 21, 29, 30, 31
21	1, 4, 5, 7, 11, 12, 20, 21, 22, 26, 34, 35, 37, 39
