

Introduction to Study Design (SS3843A) Course Outline (Fall 2022)

1. Course Information

Course Information

Course Name: Introduction to Study Design (SS3843A)

Lecture Hours: Monday, Wednesday, Friday 8:30 – 9:30 AM (NCB-114)

List of Prerequisites

Prerequisite(s): A minimum mark of 60% in Statistical Sciences 2858A/B or a minimum mark of 70% in one of Statistical Sciences 2035, Statistical Sciences 2141A/B, Statistical Sciences 2143A/B, Statistical Sciences 2244A/B, Biology 2244A/B, Economics 2222A/B, MOS 2242A/B, Psychology 2812A/B or the former Psychology 2810; and enrollment in a module offered by the departments of Applied Mathematics; Mathematics; and Statistical and Actuarial Sciences.

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. 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.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Hyukjun (Jay) Gweon (Course Coordinator)	hgweon@uwo.ca	WSC 211	519-661-2111 x87792	TBA
TA:				
TA:				

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

3. Course Syllabus, Schedule, Delivery Mode

The course consists of two main sections: survey sampling and experimental design. Topics of survey sampling covers include simple random sampling, ratio and regression estimation, stratified random sampling and cluster sampling. Topics of experimental design include fundamentals (randomization, blocking, replication), randomized designs, ANOVA, randomized block designs and factorial designs with two-way interactions.

Lecture hours: Monday, Wednesday, Friday 8:30 – 9:30 AM.

All lectures are delivered in person.

Below is the tentative weekly schedule.

Week	Topics
1	Review of estimation and mean squared error
2	Simple probability sampling
3	Stratified sampling
4	Ratio and regression estimation
5	Cluster sampling, Review
6	Thanksgiving, Midterm 1
7	Review of hypothesis testing, Type I/II errors
8	Experimental design introduction
9	Reading week
10	Experiments with a single factor
11	Randomized blocks, Midterm 2
12	Factorial designs
13	2^k factorial design
14	Summary

Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

4. Course Materials

The instructor will use his own course notes and examples.

Course notes are heavily based on the following two books (**not required but highly recommended**):

- (a) Sampling Design and Analysis by Sharon L. Lohr
- (b) Design and Analysis of Experiments by Douglas C. Montgomery

Software: We will use **R** for covering examples. Laptop or personal computer with R/RStudio installed is recommended.

Students are responsible for checking the course OWL site (<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.

All R codes that we use in class will be posted to OWL: <http://owl.uwo.ca>.

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

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Assignments (2)	10%
Quizzes (2)	10%
Midterm Tests (2)	40%
Final Exam	40%

Assignments

There will be **two homework assignments (each is worth 5%)** during the course (**due dates: Oct 5th, Nov 30th**).

Quizzes

There will be **two in-class quizzes (each is worth 5%)** during the course. The dates of the tests are **Sep 28th (Quiz 1) and Oct 26th (Quiz 2)**. The topics covered for each quiz will be announced later.

Midterm Tests

There will be **two in-class midterm tests** that cover the course material. The dates of the tests are **Oct 12th (Midterm 1) and Nov 16th (Midterm 2)**. Each midterm test will be worth 20%. The topics covered for each test will be announced later.

Final Exam

The date of the final exam will be set by the university.

Notes: All tests are closed book.

Accommodated Evaluations

- Late assessments will be subject to a late penalty of 20%/day, and assessments that are submitted 5 or more days late will not be graded. The weight for a missed assignment is NOT transferrable.
- **There are no make-up exams for quizzes/midterms. The weight of a missed quiz or exam (with a valid academic consideration, See section 6) will be transferred to the final exam.**

The student must contact the instructor to confirm the weight transfer. A weight transfer will only be made with an approval from the Academic Counselling Office AND the confirmation from the instructor.

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 on 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 denied.

6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments worth less than 10% of the overall course grade:

If you fail to meet the deadline of an assignment due to a legitimate reason (**to be determined by academic counsellors**), you must contact the instructor within 24 hours of the assignment deadline. A one-day extension may be given with the instructor’s approval.

Assessments worth 10% or more of the overall course grade:

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. 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.

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).

Note: missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

7. Accommodation and Accessibility

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>.

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 at:

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

8. 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.

For all exams, students are allowed to use non-programmable calculators.

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.

9. Support Services

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

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 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 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.