

360-101-LA

Quantitative Methods in the Social Sciences

IMPORTANT INFORMATION

Academic Discipline for this Course Methodology

Credits, Course Length, and Hours

- Credits: 2.00
- Course Length: 60 hours
- Hours: The course requires 2 hours per week of class lectures time, 2 hours per week of lab work, with an average of 4 hours per week of homework.

The role of this course in the program

This course partially satisfies the ministerial objective 022P which is to apply statistical tools to the interpretation of data related to contexts of study in the field of Social Science. This course is a prerequisite for 300-201-LA Introduction to Methodology in the Social Sciences.

Reading Material

Bennett, Jeffrey O., William L. Briggs, and Mario. F. Triola. Statistical Reasoning for Everyday Life. Toronto: Pearson (3rd, 4th, and 5th editions are acceptable).

About the instructor

- Name: Laurence Messier and Mark Paradis
- Email: MIO
- Office hours:
 - F: 10:00 – 12:00
- Office: Zoom and Mio

The main objective of this course is to acquaint the students with the fundamental concepts and basic techniques of quantitative methods and with their uses in the Social Sciences. It should also help them. The main objective of this course is to acquaint students with the fundamental concepts and basic techniques of quantitative methods and with their uses in the Social Sciences. It should also help them understand and evaluate quantitative information presented in daily life (i.e. newspapers, polls, consumer reports, etc.) or in a Social Science setting (i.e. the results of scientific research). In the course, students will learn how information is quantified and how to read and evaluate numbers reported in the media and in texts and journals. Students will become more critical consumers of numerical or quantitative data.

COURSE MATERIALS

- 1) Bennett, J., Briggs, W.L., and Triola, M.F. (2018). Statistical reasoning for everyday life. Looseleaf (À la carte) Version. 5th edition. Boston: Pearson.
- 2) USB key or online storage.
- 3) Scientific calculator.

COURSE OBJECTIVES

To apply statistical tools to the interpretation of data related to contexts of study in the field of Social Science. By the end of this course, students are expected to be able to:

- 1) Understand the meanings of the basic terms used in Quantitative Methods as they relate to the Social Sciences;
- 2) Acquire a basic knowledge of the main research methods necessary for an understanding of QM course material;
- 3) Present quantitative data in an appropriate way, using tables and charts;
- 4) Understand and evaluate quantitative information presented in daily life (e.g., newspapers, polls, media) and published Social Science research;
- 5) Identify various types of variables and scales of measurement;
- 6) Calculate and interpret various measures of central tendency, dispersion, and position;
- 7) Know the basic issues that relate to sampling and to data gathering;
- 8) Understand descriptive statistics and be able to apply them appropriately;
- 9) Understand inferential statistics and be able to apply them appropriately;
- 10) Estimate the parameters of a given population based on the corresponding statistics obtained from a sample;

- 11) Perform hypothesis testing (using as a minimum, the chi-square test of independence) and interpret the results;
- 12) Calculate and interpret measures of association using scatterplots, correlations coefficients, and make predictions using the regression equation;
- 13) Create an electronic data file, using SPSS (or other software), and perform the statistical operations learned in the course.

Contribution of this Course to the Exit Profile for your Program

The following elements of the Exit Profile will be dealt with in this course. Students will:

- Identify disciplinary-specific facts and applying knowledge;
- Apply knowledge of the scientific approach to empirical data;
- Use empirical evidence to support conclusions;
- Demonstrate a knowledge and application of qualitative and quantitative research methods;
- Demonstrate qualities associated with a scientific mind and critical thinking;
- Use appropriate information-processing technologies;
- Communicate ideas clearly in written format.

STUDENT EVALUATION

1. Pre-Class Worksheets (1.5% each, best 4 out of 5):	6%
2. Mini Quizzes (6% each, best 7 out of 8):	42%
3. Lab Assignments: (4% each, best 8 out of 9):	32%
4. Final Exam:	20%
<i>Total:</i>	<i>100%</i>

1. PRE-CLASS WORKSHEETS (1.5% each, best 4 out of 5) = 6%

One of the best ways to learn the material for this course is to start learning some of the concepts on your own before you come to class. This way you have a base of knowledge, terms, and concepts before we start each unit and we can spend more time on practice and application during each class; this will help you understand and retain the concepts better. To this end, at the beginning of each unit you will be asked to: 1) watch a movie, and/or 2) read a portion of the textbook and to use the knowledge gained from these mediums to complete a set of questions. You will be required to bring this completed worksheet to class. Please note: If you have been assigned a worksheet for homework and you show up to class with it incomplete, you may not be allowed to move on to the next stage until your homework is complete. **Worksheets will not be continued during the online instruction portion of the course.**

2. MINI QUIZZES (6% each, best 7 out of 8) = 42%

To ensure your success in this course we will use weekly quizzes to help you stay on top of the course material. These quizzes will be 1-page (front and back) and will contain multiple choice, fill-in-the blank, calculation, and explanation questions. The quizzes will not only test your content knowledge but your ability to: Understand the concepts behind the statistical calculations you are being asked to perform, apply what you are learning to your everyday life and your future career, analyze statistical problems and problem-solve their solutions, evaluate studies and the use of statistical methods, and create your own plan for how to solve problems in statistical methods and Social Science research. You will be allowed to use a calculator, however you may not use a formula sheet. **These quizzes will take place at the start of class time on the assigned dates.**

3. LAB ASSIGNMENTS (4% each, best 8 out of 9) = 32%

In this course, we want to make sure that you are deeply learning the material, instead of just memorizing the material: The best way to do this is regularly practicing and applying what you are learning. To work towards your success in this course you will have weekly labs to help you apply the knowledge you are learning in the

classroom and in the textbook. **Prior to the COVID-19 interruption**, the lab assignments will be done in the computer lab and instructions will be given out at the beginning of each lab. Work is to be handed in at the end of the lab class, however if further time is needed you may ask permission to hand the work in later that week. Please note that many of the lab assignments use the statistical software package SPSS, so you will have to find a time slot in the computer lab to finish your work. **After the COVID-19 interruption, lab assignments will be completed at home using a readily available statistical software. Detailed lab instructions will be provided in writing and/or by video. Students will turn in the completed lab assignment on Lea by the designated date.**

4. FINAL EXAM (20%)

This last assessment method is the course's most traditional. In order to prepare you for higher-level statistics courses and to make sure that you leave the course with a full body of knowledge relating to statistics, the final exam will be cumulative (i.e., it will cover the entire term's course material) and will be held **during class time on May 19**. You will be allowed a calculator and a pre-prepared formula sheet will be provided for you.

Welcome to the Course!

To ensure that you have the best possible chance of succeeding in this course, that you have the best possible learning environment, and that you receive the best education, the following policies are in effect:

ON-LINE CONTENT: Quantitative Methods is a course where people often find they need additional or different explanations until a concept deeply sinks in. In order to enhance your learning, I will regularly post helpful videos, websites, and other online demonstrations on Léa that will complement the lessons from class. If you find you are having a hard time understanding a concept in class, please feel free to browse through the additional course material posted online to learn more. You will also be required to use Léa to access assignment instructions and to submit your labs.

CLASSROOM COMPORTMENT: In this course, all students will be treated with respect, regarded as equals, and treated fairly without discrimination. On your part, you are expected to respect your peers' right to learn in the best possible environment and to act as responsible adults. To this end, completing work unrelated to the course, private conversations, talking during lectures, sleeping, and any other disruptive behaviours are not permitted. **Any Zoom meetings are to be treated as if they were classroom meetings.**

TECHNOLOGY: The use of technology for educational purposes - including laptops, tablets, and phones – is encouraged in this class. In addition to seeing how we can study social issues using statistics, we will also take a look at numerous examples of statistics and their use in everyday life, the media, and Social Science studies. You may find that looking up the topics we are learning about on news websites, Wikipedia, and online databases in class is helpful for you and your preferred style of learning. However, in order to maximize your learning avoid behaviours that will divide and compete for your attention. To this end, I will ask that you refrain from the following behaviours in class: 1) using a laptop/tablet for purposes unrelated to the course, 2) texting or using social media (Snapchat, Instagram, Facebook, etc.), 3) listening to music or videos (please save any methodology related-videos you have found until after the class is over). To promote a safe environment, if you need to take a photo in class please make sure to ask the permission of those who appear in the photo. **Note: It is important to avoid distractions as much as possible while completing the course from home.**

ATTENDANCE AND PUNCTUALITY: Attendance has a proven positive effect on your success in Quantitative Methods. Students who miss more than 3 classes are usually unable to successfully pass the course because they have missed too much material. To this end, please do what you can to avoid missing class. College policy states that the maximum number of absences is 20% (6 classes), with no more than half of those absences (3 classes) being unexcused. Students with excessive absences will be asked to meet with the teacher

to discuss the likelihood of completing the course requirements. Avoid arriving to class late or leaving early as it distracts your fellow students and prevents you from being as successful as possible in the course. I will post excused and unexcused absences on Léa to help you keep track of your attendance and to help you catch up with missed material. **Note: for the online portion of the class, students will be expected to attend all class times that include quizzes and exams. Students will be expected to complete lectures and readings, but will be able to select the time that best suits their schedules.**

PROVING AN EXCUSED ABSENCE AND MAKING UP MISSED ASSESSMENTS: If you are absent for an excused reason, please try to notify me ahead of time, if possible. Examples of an excused absence include: serious illness, serious family emergency, or religious holiday. Please be advised, that in the case of a serious illness or family emergency, you may be asked to provide proper supporting documentation. This documentation can be shown to me during my office hours or sent to me as a photo through MIO for more privacy. Here are the absence policies for all of our assignments:

- If you have an excused absence on the day of the final exam, I will set an alternate date for the final exam.
- If you have an excused absence on the day of a quiz, you can choose to reschedule the quiz for that same week or drop that quiz mark as one of your 1/10 uncounted quizzes.
- If you have an excused absence on the day of a lab, you can choose to resubmit the lab by the end of the week or drop that lab mark as one of your 1/11 uncounted lab marks.
- If you have an excused absence on the day you were supposed to hand in a worksheet, you can bring in the completed worksheet to our next class or drop that worksheet mark as one of your 2/12 uncounted worksheet marks.
- If your absence was unexcused, unfortunately no alternate evaluation can be given and you will be given a grade of '0' on that assignment.

LATE ASSIGNMENTS: One of the goals of Cegep is to help you develop skills in managing deadlines, so all assignments are to be handed in on the day assigned. Completed worksheets will be required in order for you to participate in class on that unit. Due to the nature of the assignment structure in this class, accepting late assignments is not that feasible: quizzes, labs, and worksheets must be done on the days assigned in order for you to progress through the learning process in this course. Please see the section directly above on how to make up assignments if you have an excused vs. and unexcused absence.

CLEAR GRADING AND TIMELY CORRECTIONS: On my part, every evaluation method will contain clear grading criteria. Numerical grades will be assigned as follows, as per college policy: 90-100% for work that is of outstanding quality, 80-89% for work that is of very good quality, 70-79% for work that is of good quality, 60-69% for work that is of satisfactory quality, and 0-59% for work that is of unsatisfactory quality (failure). In addition, to facilitate learning corrections will be handed back as soon as possible: within 2-3 weeks.

LANGUAGE: The correction of written English is part of the quality of the teaching offered at Champlain St. Lambert. One of the goals of this course is for students to use and develop their English-language skills in: reading and oral comprehension, speaking, and writing. Up to 20% of your grade on written assignments and essays will be dedicated to using proper English. If you experience trouble, please contact myself or the Learning Centre for further help.

ACADEMIC INTEGRITY: In order to ensure that the accomplishments of students in this course are not diminished, cheating and plagiarism will not be accepted. Cheating or plagiarising on any assignment or evaluation - no matter how big or small the offense - will result in you receiving a grade of '0' (zero) on the assignment or evaluation and the 'Academic Integrity Form' will be filled out and placed in your file at the Registrar's Office. If there is another 'Academic Integrity Form' from your time here at Champlain you will

receive a grade of '0' (zero) in the course. The college policy on cheating and plagiarism is in the IPESA, sections 5.4.1 and 5.4.2. See the last page of this course outline for more information.

INSTRUCTIONAL METHODS TO BE USED IN THIS COURSE: The best way to learn statistics is by actively engaging and practicing the material, therefore a variety of different methods of instruction will be used in the course, including: lectures, class discussions, small-group discussions, readings, in-class assignments and activities, labs, group work, photos, and films. Students in this course are expected to participate in all class activities. **For the online portion of the class, the course will include: 1) recorded lectures made available through Lea, 2) group and individual meetings on Zoom during lecture times, 3) labs (with video and/or written instructions) to be completed at home, 4) readings, and 5) at-home quizzes and exams during class time.**

TUTORING FOR THIS COURSE: If you need help with the course material, you may at any time ask me for further explanation or help. In addition, free tutoring is available to you on an individual or group basis. If you are interested see the Writing Centre on the third floor of the Library, Room B-300. It is best to sign up for these services as soon as you know you need them, as they can fill up quickly.

ADDITIONAL BIBLIOGRAPHY: Additional resources (readings, books, films, and websites) will be mentioned regularly in class to provide extra information and context. These are intended for your own interest and are not a list of required material.

Note on Calculators

In order to ensure that the accomplishments of students in this course are not diminished, it is my job to ensure that cheating on quizzes and the final exam is not occurring. Unfortunately, it is not possible for me to properly invigilate an exam while students are using the calculator app on their cellphone. During quizzes and the final exam, only two options for calculating exist: 1) You may bring your own scientific calculator, with the lid/cover and the instructions removed. Any calculators that are programmable, internet-capable, part of another device, have text storage, and/or long-term memory will not be accepted. 2) You may do the calculations without a calculator, using a rough piece of paper to work out your calculations. You must hand in all of your rough work with your quizzes or final exam. **Note: Since I cannot verify what tools you are using at home during quizzes and exams, including your calculations will be extra important. Failure to do so will result in significant grade reductions.**

Note on Group Work

Group work is encouraged in this course. A participatory class is proven to increase your learning. In this type of classroom: you receive learning support from both your fellow students and your teacher, you use class participation and exchange ideas as part of the learning process, and you collectively solve problems. However, it is important to self-monitor your group work for three negative behaviours that will impede your learning: (1) Are you always dividing up the tasks instead of working collaboratively? (2) Are you using your group as a crutch? *E.g.* Are you always letting others do the work for you? (3) Are you asking others for answers/copying the answers of others (which is cheating), instead of collectively solving problems? **In Labs, you may work with up to 1 partner.**

Overview: Champlain College's Policies

These are a few important points copied from the IPESA. Please read the entire document online.

CLASS ATTENDANCE POLICY: In accordance with College policy, students are expected to attend all class meetings and to arrive on time. Students are responsible for all course work, even for classes that they miss due to an “excused” or “unexcused” absence. An absence is defined as non-attendance for any reason, whether illness, emergency, or official leave. Unexcused absences, tardiness, and leaving class early are discouraged.

If you are absent more than ten percent (10%) of the total meeting time during the semester with an unexcused absence, you may be assigned a failing grade in the course. This is a 45-hour course; the limit of absences before reaching ten percent is four and a half (3) hours. Any absence from class is detrimental to your progress; therefore, an “excused” absence is no less serious than “unexcused.” As such, you are urged not to miss classes without good reason. Attendance is mandatory at all tests scheduled in your Course Objective; due dates for assignments must be respected. This rule may be deviated from on the grounds of illness necessitating confinement for 24 hours or more, death in the family, or other extreme emergencies. You will be required to furnish verification of circumstances by a note from the hospital, doctor, nurse, police officer (for an accident report or any other excuse involving the police), or Dean, as appropriate, to the Registrar’s Office should this be the case. For more information about the College’s Attendance Policy, please refer to section 5.2 in the IPESA.

SUBMITTED WORK: Students are in an academic institution, where academic rigor is expected. As such, attendance is not optional. In this context, students are expected to attend all classes. Thus, students are fully responsible for all completed work, schedule adjustments and assigned work addressed during class. It is the student’s responsibility to make arrangements for any planned or unplanned absences (i.e. interviews, illnesses, personal emergencies, etc.) In conformity with Section 5.2.3 of the IPESA, the consequences of unexcused absences are specified in the course outline. As per module policy, late assignments and projects may NOT be accepted without a penalty. Work that is not handed in on the due date may receive a mark deduction of 10% per academic day after the due date. A makeup assignment may be given to students who are absent with a medical or legal note.

In conformity with section 2.4 of the IPESA, all assignments and projects involving written material are to be evaluated for correct use of English. Students will be penalized between 5% and 15% for improper use of English. Additionally, poorly written work may be returned without grading. If re-submission of the work is permitted, it may be graded with marks deducted for poor English and/or for being late.

CHEATING AND PLAGIARISM POLICY: Cheating and/or plagiarism are serious academic offences. Punishment ranges from receiving the grade of zero for the plagiarized paper or the exam on which the cheating occurred, to a recommendation, in critical cases, that the student be withdrawn from the course. A student who repeatedly commits such offences may be told to leave the institution. An example of plagiarism is the submission of any work that is copied from the Internet or from another student or based on material from a previous semester and submitted as your own. Anti-plagiarism software may be used by teachers to verify students’ work. Students are strongly advised to carefully read section 5.4 in the IPESA. Offences are kept on file and will be reported to the Office of the Registrar for inclusion in the student’s permanent record.

MARK REVIEW: Contesting a grade should be made at the informal level first, by speaking with your teacher. Only after that stage should you proceed to the formal level of ordering a mark review. Please read over the procedure in section 6.2.2. You should retain all copies, rough drafts, notes, etc. of all your work so that should you wish to appeal a grade, you will have evidence of your work.

IPESA: Make sure to read the full IPESA document, so that you are aware of your rights and responsibilities as a student.

Schedule Winter 2020

Class	Date	Specific Topic of the Day	Textbook Chapter 5 th Edition	Assignments Due
1	Tuesday, January 21	Introduction		
2	Friday, January 24	Unit 1: Intro to QM and Descriptive Numbers • Sampling\ • Types of Studies	Chapter 1	
3	Tuesday, January 28	Unit 1: Intro to QM and Descriptive Numbers • Should you believe a study? • Levels of measurement	Chapter 2	
4	Friday, January 31	Unit 1: Intro to QM and Descriptive Numbers • Types of Errors • Use of Percentages • What are Index Numbers	Chapter 2	Worksheet Unit 1
5	Tuesday, February 4	Lab Unit 1: Getting to know SPSS by entering nominal and ordinal data	Chapter 1 & 2	Quiz Unit 1 Lab Unit 1
6	Friday, February 7	Unit 2: Organizing Data Visually • Frequency Tables • Picturing Distributions • Graphics	Chapter 3	Worksheet Unit 2
7	Tuesday, February 11	Lab Unit 2: Descriptive Graphics, both in SPSS and outside databases	Chapter 3	Quiz Unit 2 Lab Unit 2
8	Friday, February 14	Unit 3: Graphing Distributions • Average • Shapes of Distributions • Variation • Paradoxes	Chapter 4	Worksheet Unit 3
9	Tuesday, February 18	Lab Unit 3: Average, Distributions, and Variation	Chapter 4	Quiz Unit 3 Lab Unit 3
10	Friday, February 21	Unit 4: Normal Distribution • Properties of Normal Distribution	Chapter 5	Worksheet Unit 4
11	Tuesday, February 25	Lab Unit 4: Recoding data in SPSS and normal distributions	Chapter 5	Quiz Unit 4 Lab Unit 4
12	Friday, February 28	Unit 5: Official Statistics • Central Limit Theorem • Treaties and laws • Overview of official statistical organizations • Overview of open source databases		Worksheet Unit 5
Reading Week				
13	Tuesday, March 10	Lab Unit 5: Statistique Quebec and Statistics Canada		Lab Unit 5
COVID-19 Interruption				
14	Tuesday, April 7	Unit 6: Probability • Why probability in statistics? • Probability basics • Expected value • Law of large numbers • Monty Hall problem	Chapter 6	
Easter Break				
15	Tuesday, April 14	Lab Home 1		Quiz Unit 6

16	Friday, April 17	Unit 7: Correlations • Seeking correlations • Interpreting correlations • Best-Fit Lines and Prediction	Chapter 7	Lab Home 1
17	Tuesday, April 21	Lab Home 2		Quiz Unit 7
18	Friday, April 24	Unit 8: Inferences from Samples to Populations • Sampling Distributions • Estimating Populations Means • Estimating Population Proportions	Chapter 8	Lab Home 2
19	Tuesday, April 28	Lab Home 3		Quiz Unit 8
20	Friday, May 1	Unit 9: Hypothesis Testing • Fundamentals of Hypothesis Testing • Hypothesis Tests for Population Means	Chapter 9	Lab Home 3
21	Tuesday, May 5	Unit 9: Hypothesis Testing • t Distributions • Two Groups	Chapter 10	
22	Friday, May 8	Unit 9: Hypothesis Testing • Comparing Two Independent Groups • One-Way Analysis of Variance (ANOVA)	Chapter 10	
23	Tuesday, May 12	Lab Home 4		Quiz Unit 9
24	Friday, May 15	Review Session		Lab Home 4
25	Tuesday, May 19	Final Exam (during class time)		

Cheating, Plagiarism, and Quantitative Methods

What you have to know before completing assignments for this course.

By Nadine Elizabeth Korte

Social Scientists are required to use works by other authors as evidence, so we always have to pay close attention to make sure we are being truthful and clear. We have to constantly make sure that we acknowledge when we are presenting someone else's work and that we differentiate it from our own words and ideas. In order to accomplish this Social Scientists use detailed citation systems, such as APA, MLA, and Chicago Style whenever we quote or paraphrase from a source to differentiate our ideas from those of our sources. We also use these uniform systems so that our research can be verified and replicated. Cheating and plagiarism are punishable offenses, *whether you mean to commit them or not*. Therefore, it is your responsibility to read this page on cheating and plagiarism and to ensure that you understand everything in it.

DEFINITIONS OF CHEATING AND PLAGIARISM

Cheating is defined in the IPESA as: "any deceptive or dishonest practice relative to academic coursework and evaluation intended to provide oneself with undeserved advantage" (5.4.1). Plagiarism is defined in the IPESA as: "the use by a student of someone else's language, ideas, images, statistical information or other original material without acknowledging its source (5.4.2). Please keep in mind these two important points: 1) Plagiarism does not only include copying someone's words, but it also includes copying someone's ideas. 2) Cheating and plagiarism are punishable, regardless of whether your actions were intentional or unintentional.

EXAMPLES OF CHEATING AND PLAGIARISM COMMON IN QUANTITATIVE METHODS

Examples of cheating and plagiarism include, but are not limited to, the following:

- Using a shared calculator to share answers during a quiz, test, or exam.
- Looking at someone else's paper or allowing someone else to look at your quiz, test, or exam.
- Using a cellphone to text or receive answers during a quiz, test, or exam.
- Copying answers or equations already completed by someone else.
- Submitting a lab that contains a portion(s) written by someone else.
- Cutting or pasting internet content into labs without proper citations and/or references pages.
- Submitting a lab that was already submitted to this course.
- Submitting a lab that was written by someone else.
- Submitting a lab that contains a quote written by someone else without proper citations and/or references pages.
- Paraphrasing someone else's material in your lab without proper citations and/or references pages.
- For more examples and further information, see the IPESA, sections 5.4.1 and 5.4.2.

WHY IS THIS SUCH A BIG DEAL?

Cheating is considered unethical because it gives you an unfair advantage over your fellow classmates and it means you will be unprepared for university.

Plagiarism is considered unethical because it involves stealing and being dishonest. In our society, original ideas, theories, and writing are considered to be the property of the author (intellectual property).

HOW DO I PREVENT THIS FROM HAPPENING?

In addition to making sure you don't commit any of the examples of cheating and plagiarism listed above, you also have to:

- Read the APA handout from the library and www.unlockingresearch.com: The library has created an instruction sheet and website for APA style. You can grab a paper copy at the reference desk of the library or you can visit <http://www.unlockingresearch.com>. Read these over and if you have any questions, please ask myself or the reference librarian.

- Reference quotes and paraphrased ideas: Make sure written work contains proper citations and/or references page if you have used the words or ideas of others in your work.
- Save your calculations and keep them safe: Make sure that you show all of your work when figuring out statistical equations. Save this work, keep it safe, and make sure it cannot be copied by others.