



CEGEP CHAMPLAIN - ST. LAWRENCE

360-255-LW: Quantitative Methods for the Social Sciences II

Fall 2009

Instructor: Martin Huard

Office: 318

Web Site : <http://slc.qc.ca/mh/>

e-mail : mhuard@slc.qc.ca

Telephone: 656-6921, ext. 435

Ponderation: 2-1-3

Credits: 2

Prerequisite : Quantitative Methods for the Social Sciences (360-300-LW)

Course Context : Level 2 course, compulsory in the Psychology Profile

Competencies

To thoroughly analyse a human phenomena (022R).

To apply concepts related to the Social Science disciplines to the understanding of the human phenomena in concrete situations (022S).

To apply advanced statistical tools, based on the probability theory, to decision making in contexts of study in the field of Social Science (022W).

Elements of competencies

1. To know and understand the facts, notions, concepts, theories, methods and other components of the knowledge related to Social Science disciplines.
2. To analyse various aspects of cases, situations or problems.
3. To analyse a theme based on knowledge already acquired.
4. To identify concrete situation that lend themselves to study.
5. To use concepts applicable to these situations.
6. To use a strategy appropriate to the study of these situations.
7. To correctly incorporate the probability in the decision-making process.
8. To correctly use the various probability distributions in the decision-making process.
9. To standardize data.
10. To estimate an average in a given population using confidence intervals, small samples and taking confidence levels into account.
11. To perform the most appropriate test of hypothesis.

Textbooks

No textbook is required for this course.

Additional References

Understanding Basic Statistics (4th edition) by C.H. Brase and C.P. Brase, Houghton-Mifflin, 2007.

Just the Essentials of Elementary Statistics (9th edition) by R. Johnson and P. Kuby, Thomson Brook/Cole 2005.

Introduction to Probability & Statistics (10th edition) by W. Mendenhall, R. Beaver and B. Beaver, Duxbury 1999.

Statistical Methods for Psychology (5th edition) by D. C. Howell, Duxbury 2002.

Teaching Method

The course is given in an interactive lecture form, with frequent interludes for you to try out the ideas being considered.

Course Content

Probabilities: introduction to combinatorics; introduction to probability; rules of probability; conditional probability and, Bayes' Theorem; random variables and expected value, probability distributions: binomial, Poisson, normal, student, chi-squared.

Inferential Statistics: sampling and the sampling distribution; confidence intervals; estimation of mean (large and small samples) and proportions; test of an hypothesis; test on a mean (large and small samples) and on a proportion; test on means of paired/independent samples; test on proportions; chi-square tests; regression and correlation analysis.

Evaluation

The performance criteria for this course are:

- Accurate use of appropriate concepts and vocabulary.
- Accurate evaluation of the probability of events using combinatory analysis, binomial distribution or normal distribution.
- Appropriate calculation of the probability distribution of a discrete random variable and of its expectation and standard deviation.
- Correct use of probability distributions in a decision-making process.
- Satisfactory transformation of data into standardized data based on a rating scale commonly used in psychology and education.
- Interval estimation of an average in a given population, using small samples and taking confidence levels into account.
- Rigorous performance of hypotheses testing on an average, a proportion and a population, and a test for the goodness of fit on a distribution, taking into account the significance level.
- Formal verification of the effect of the treatment on a group by comparing two averages using paired samples or independent samples.

There will be four term tests, four assignments and a final evaluation consisting of a final exam examination. The midterm and final grade will be calculated as follows:

	<u>Midtem grade</u>	<u>Final Grade</u>
Tests	2 at 40% each	4 at 12% each
Assignments	2 at 10% each	4 at 3% each
Final Exam	-	40%

If a student is absent for a test due to a College-authorized reason (see the *Institutional Policy on the Evaluation of Student Achievement (IPESA)*, section 2.7 on the SLC web site <http://www.slc.qc.ca/>), then a make up evaluation will be given, otherwise a student will be given zero (0). Late assignments will be severely penalised (10% taken off per day), and will not be accepted once I have given back the graded assignments.

Tests and assignments (including the final examination) will be graded on the proper use of English and Mathematics. That means that written passages must be grammatically correct and that proper mathematical style and notation will be required. Up to 15% of the mark on an evaluation may be taken off.

Absences

Attendance is mandatory and a maximum of 5 absences will be tolerated (explained and/or unexplained). More than the 5 absences may mean failure in the course (see section 5.2 of the IPESA).

Rules & Regulations

St. Lawrence has definite regulations concerning cheating and plagiarism. Any student caught cheating or plagiarizing on an assignment or a test will automatically receive a zero for that assignment or test. If a student is caught a second time, automatic failure in the course will result and disciplinary action may be taken. For more information, the student can consult section 5.5 of the IPESA where these rules are clearly indicated.