



SCHOOL OF BUSINESS AND CREATIVE DESIGN

Marketing and Management Department

Course Outline – Spring 2014

Course Code: STA 1103

Course Title: Business Statistics

Prepared By: C. Middleton

Date: August 2011

Revised By: P. Hansuld

Date: May 2014

Approved By: Yvonne Clarke, Associate Dean

Prerequisite: MTH 2223

Corequisite: None

Prerequisite for: MAN 2003

1. Course Description

This course provides an overview of the techniques of statistical inference. We will review descriptive statistics and probability distributions. Then we will study estimation, hypothesis testing, correlation and regression. The focus is on problem solving.

2. General Education and Essential Employability Skills

This course provides the following provincial Essential Employability Skills:

- #1: Communication
- #2: Numeracy
- #3: Critical Thinking and Problem Solving
- #4: Information Management
- #5: Interpersonal
- #6: Personal

Is this course approved as a General Education course?

☒

No

☐

Yes

Students should refer to their program's restricted General Education courses for final determination.

3. Learning Outcomes

Upon successful completion of this course, the learner will be able to:

1. Compute point and interval estimates for a population mean or proportion.
2. Develop and test hypothesis about population means, variances, proportions, and differences in means and proportions.
3. Explain the potential errors associated with hypothesis testing.
4. Explain how to make choices in the face of hypothesis testing tradeoffs.
5. Use regression and correlation to investigate structural relationships.
6. Access appropriate computer software.

4. Course Objectives

(The number in brackets at the end of each objective refers to the learning outcome from section 3.)

| | | <i>Learning Outcome Reference Number</i> |
|---------------|---|--|
| Unit 1 | Introduction | |
| 1.1 | The nature of statistics Explain the relationship between descriptive and inferential statistics. | [2] |
| 1.2 | Review of descriptive statistics Compute the mean, variance and standard deviation for data. Draw a histogram for data. | [2] |
| 1.3 | Review of probability and probability distributions Interpret a probability. State and interpret the addition and multiplication rules of probability. State the conditions under which a random variable follows a binomial distribution Find critical points for a rv that follows a normal distribution. | [2] |
| Unit 2 | Estimation | |
| 2.1 | Introduction Explain the relationship between descriptive and point estimates. | [1] |
| 2.2 | Point estimation Compute the point estimate for a population mean. Interpret the point estimator as an unbiased estimator. Interval estimation of a normal population mean Describe the sampling distribution for the mean of a sample from a normal population. | [1] |
| 2.3 | Interval estimation of a population proportion Specify the statistical model for a rv that follows a normal distribution. Compute a CI for the mean of a normal population, population variance known. Interpret a CI. Explain the role of the central limit theorem. Compute an approximate CI for a population proportion. | [1] |

Unit 3 Hypothesis testing

- 3.1 Introduction [2]
Explain the purpose of hypothesis testing.
- 3.2 A test for a normal population mean. [2,3]
Test a normal population mean, population variance known.
Perform a one-way test.
Define and explain the tradeoffs involving Types I and II Error and Power.
Test a normal population mean, population variance unknown
- 3.3 A test for a normal population variance [4]
Test a normal population variance
- 3.4 A test for the difference in two normal population means [2]
Test for the equality between two normal population means.
Test using paired samples.
- 3.5 A test for a population proportion [2]
Test a population proportion.
- 3.6 A test for the difference in two population proportions [2]
Test for the difference between two population proportions.

Unit 4 Regression

- 4.1 Identify and interpret the coefficients of a linear equation. [5]
Specify a structural regression model.
- 4.2 Bivariate description and correlation [5]
Plot control and response variables.
Explain a line of best fit.
Interpret a correlation coefficient.
- 4.3 Simple regression [5,6]
Estimate and interpret intercept and slope regression coefficients.
Test regression coefficients.
Interpret the coefficient of determination.
Forecast the response variable.
- 4.4 Multiple regression [5,6]
Estimate, test and interpret intercept and slope regression coefficients.
Interpret the coefficient of determination.
Forecast the response variable.

NOTE

THE CERTIFIED GENERAL ACCOUNTANTS ASSOCIATION OF ONTARIO

Please note that, at the time of writing, this course is recognized for credit with the above professional body, leading to the designation C.G.A. For further information, please contact the co-coordinator of Accounting programs at the College, Tony McGowan, in room B201, or by telephoning the Association at 1-800-668-1454.

5. Resources and Supplies

a. Required

Lind, D. Marchal, W., Wathen, S., Waite, C.A. (2012) Basic Statistics for Business Economics (4th Canadian Edition). McGraw-Hill Ryerson

b. Supplemental

6. Methodology

Instruction is in the form of lectures, augmented with classroom discussions of problems and cases, and in-lab work.

7. Student Evaluation

A grade of D is the passing grade for this course. Some programs, however, may require a higher grade in order to progress through and graduate from the program. Students should check the program requirements for their particular program.

Learners will write tests on dates specified. Exceptions to these conditions must be approved by the instructor in advance. The learner may be asked to write the test at an alternate time; the final grade may be pro-rated for a missing test, or the test may be given a value of zero in the grade.

The following elements will determine the student's final grade:

| | |
|-----------------------------------|-------------|
| Assignments (5 equallu weighted) | 15% |
| Test (3 equally weighted) | 85% |
| Total | 100% |

The round off mathematical principle will be used. Percentages are converted to letter grades and grade points as follows:

| Mark (%) | Grade | Grade Point | Mark | Grade | Grade Point |
|----------|-------|-------------|-------|-------|-------------|
| 94-100 | A+ | 4.0 | 67-69 | C+ | 2.3 |
| 87-93 | A | 3.7 | 63-66 | C | 2.0 |
| 80-86 | A- | 3.5 | 60-62 | C- | 1.7 |
| 77-79 | B+ | 3.2 | 50-59 | D | 1.0 |
| 73-76 | B | 3.0 | 0-49 | F | 0.0 |
| 70-72 | B- | 2.7 | | | |

8. Academic Integrity

Lambton College is committed to high ethical standards in all academic activities within the College, including research, reporting and learning assessment (e.g. tests, lab reports, essays).

The cornerstone of academic integrity and professional reputation is principled conduct. All scholastic and academic activity must be free of all forms of academic dishonesty, including copying, plagiarism and cheating.

Lambton College will not tolerate any academic dishonesty, a position reflected in Lambton College policy. Students should make themselves familiar with the [Students Rights and Responsibilities Policy](#), located on the MyLambton website for details concerning academic dishonesty and the penalties for dishonesty and unethical conduct.

Questions regarding this policy, or requests for additional clarification, should be directed to the [Lambton College Centre for Academic Integrity](#)

9. Related Items

Students with Disabilities

If you are a student with a disability please identify your needs to the professor and/or the Accessibility Centre so that support services can be arranged for you. You can do this by making an appointment at the SSD, Room L103 ext.3427 or by arranging a personal interview with the professor to discuss your needs.

Student Rights and Responsibility Policy

Acceptable behaviour in class is established by the instructor and is expected by all students. Any form of harassment or violence will not be tolerated. Action will be taken as outlined in Lambton College policy.

Cheating and plagiarism are serious academic offences subject to disciplinary action. It is the student's responsibility to be aware of the cheating policy as described in the Lambton College Student Rights and Responsibilities policy. For further information on all of these policies, links may be found on the Lambton

College website.

Prior Learning Assessment Statement

This course is eligible for Prior Learning Assessment

☒ **Yes** ☐ **No**

If yes has been selected, you may choose to contact the Counselling Department for advice on Prior Learning Assessment.

Date of Withdrawal without Academic Penalty

Please consult the Academic Regulations and Registrar's published dates.

Waiver of Responsibility

Every attempt has been made to ensure the accuracy of this information as of the date of publication. The content may be modified, without notice, as deemed appropriate by the College.

Note: It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.