

Statistics I

SCHOOL OF BUSINESS

Course Number: QUA2220	Contribution to Program: Vocational Core	Normative Hours: 60
Applicable Program(s): 0214C01FWO Business - Accounting	AAL: 1	Approval Date: 28/08/2008
Prepared by: Marie Durocher Professor		Approved by: Peter Fortura Chair
Co-Requisites N/A		Approved for Academic Year: 2008-2009
Pre-Requisites N/A		

COURSE DESCRIPTION

The course focuses on descriptive methods of data classification, sampling, collecting, organizing and presentation of data in order to evaluate various business situations in a decision-making context. Computations through appropriate computer software is emphasized. Students learn mathematical methods for descriptive statistics, normal curve, frequency distributions and measures of location and variation. Students become familiar with the construction of index numbers and their applications. Time series analysis is covered including computations for short-term forecasting. Finally, students learn to use simple and multiple regression and correlation analysis to investigate the relationship between variables.

RELATIONSHIP TO VOCATIONAL LEARNING OUTCOMES

This course contributes to your program by helping you achieve the following Vocational Learning Outcomes:

Business - Accounting 0214C01FWO

4	Use mathematical techniques to support the financial management of a business organization including the preparation of financial information.(T,A,CP)
5	Apply computer skills and knowledge of accounting information systems to support the accounting function including maintaining accounting records and preparing financial statements and reports.(T,A,CP)

ESSENTIAL EMPLOYABILITY SKILLS

The course contributes to your program by helping you achieve the following Essential Employability Skills:

3	Execute mathematical operations accurately.(T,A,CP)
4	Apply a systematic approach to solve problems.(T,A,CP)
6	Locate, select, organize and document information using appropriate technology and information systems.(T,A,CP)
7	Analyze, evaluate and apply relevant information from a variety of sources.(T,A)
10	Manage the use of time and other resources to complete projects.(T)
11	Take responsibility for one's own actions, decisions and consequences.(T)

COURSE LEARNING REQUIREMENTS/EMBEDDED KNOWLEDGE AND SKILLS

COURSE LEARNING REQUIREMENTS When you have earned credit for this course, you will have demonstrated the ability to:	EMBEDDED KNOWLEDGE AND SKILLS
1. Evaluate a business situation by examining a questionnaire for the collection of appropriate data	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ Examining questionnaires for the collection of raw data to facilitate the evaluation of business situations
2. Prepare various types of statistical charts for an optimum visual representation of data, such as line, bar, component, two-directional, pie and stock charts	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ Creating well proportioned statistical line, bar, component, two-directional, pie and stock charts
3. Choose, prepare and graphically display various characteristics in the frequency distribution of raw data as histograms, frequency polygons and Ogives	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ Graphically displaying frequency distributions through histograms, frequency polygons and Ogives

4. Compute various measures of central tendencies and locations: the mean, median, mode, quartiles, deciles and percentiles for ungrouped and grouped data	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ To be familiar with and calculate the mean, median, mode, quartiles, deciles and percentiles of grouped and ungrouped data
5. Compute and interpret measures of dispersion: Range, interquartile range, average deviation, variance, standard deviation, coefficient of variation and skewness for ungrouped and grouped data	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ To be familiar with and calculate the range, interquartile range, average deviation, variance, standard deviation, coefficient of variation and skewness of ungrouped and grouped data
6. Compute simple and weighted indices, shift and splice index numbers, and use the CPI to calculate absolute purchasing power, real income and time dependent deflated sales	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ To be familiar with index numbers and their application to simple and weighted indexes, and to the CPI
7. Use the multiplicative TSCI time series model to compute and graph the least square trend (T) values, the seasonal (S) index numbers, the cyclical-irregular (C) index numbers, deseasonalize and interpret given data, and perform short term forecasts	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ To be familiar with using the least squares method to find a trend equation ○ To be familiar with seasonal indices and cyclical-irregular indices
8. Perform all course required calculations on an electronic hand calculator, and/or on a personal computer using Excel computer software	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ To use an electronic hand calculator and/or a personal computer with appropriate software for the computation of all course required variables
9. Investigate, graph, describe and interpret the relationship between two variables and use it as a forecasting tool – simple regression and correlation analysis	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ To use the linear least squares method of calculating the simple regression equation and error terms
10. Investigate, describe and interpret the relationship between more than two variables and use it as a forecasting tool – multiple regression and correlation analysis	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ Knowledge of computer software to aid in the calculation of various values

LEARNING RESOURCES

<ul style="list-style-type: none"> • Hummelbrunner, Rak, Gray, Fortura, Taylor <u>Contemporary Business Statistics with Canadian Applications</u>, Third Canadian Edition, Prentice Hall Canada Inc. • Handout or Blackboard posting of course material • Computer • External backup media, Diskettes, CDs, memory stick • Blackboard • Computer software (Excel loaded with all the Data Analysis Tools) • Website: www.pearsoned.ca/statshummelbrunner

LEARNING ACTIVITIES

<p>During this course, you are likely to experience the following learning activities:</p> <ul style="list-style-type: none"> • Receipt of a detailed syllabus during the first class, containing an explanation of learning activities - course outline, mark distribution, and test dates • Completing required written assignments to assist in meeting various course learning requirements • Participating in all classroom quizzes, tests and exams at specified times. Note: Marks will only be redistributed if a valid doctor's certificate is provided and that the teacher is informed by the test date. • Maintaining a comprehensive set of classroom notes as a subsequent aid for self study and reference for assignments, quizzes and tests • Being present and attentive for and during classroom sessions <p>You will also experience:</p> <ul style="list-style-type: none"> • classroom lectures • handouts, postings on Blackboard • student participation in classroom problem solving • use of computer software - EXCEL or other software - At least one package must be used to demonstrate software application in the delivery of statistics topics • Student Union sponsored peer tutoring

EVALUATION/EARNING CREDIT

The following will provide evidence of your learning achievements:	This activity validates the following Course Learning Requirements and/or Essential Employability Skills:
5% - assignments and quizzes for the first half term	<ul style="list-style-type: none"> • Perform all course required calculations on an electronic hand calculator, and/or on a personal computer using Excel computer software • Evaluate a business situation by examining a questionnaire for the

	<p>collection of appropriate data</p> <ul style="list-style-type: none"> • Prepare various types of statistical charts for an optimum visual representation of data, such as line, bar, component, two-directional, pie and stock charts • Choose, prepare and graphically display various characteristics in the frequency distribution of raw data as histograms, frequency polygons and Ogives • Compute various measures of central tendencies and locations: the mean, median, mode, quartiles, deciles and percentiles for ungrouped and grouped data • Compute and interpret measures of dispersion: Range, interquartile range, average deviation, variance, standard deviation, coefficient of variation and skewness for ungrouped and grouped data • Execute mathematical operations accurately. • Apply a systematic approach to solve problems. • Locate, select, organize and document information using appropriate technology and information systems. • Analyze, evaluate and apply relevant information from a variety of sources. • Manage the use of time and other resources to complete projects. • Take responsibility for one's own actions, decisions and consequences.
<p>25% - first mid term test</p>	<ul style="list-style-type: none"> • Prepare various types of statistical charts for an optimum visual representation of data, such as line, bar, component, two-directional, pie and stock charts • Choose, prepare and graphically display various characteristics in the frequency distribution of raw data as histograms, frequency polygons and Ogives • Compute various measures of central tendencies and locations: the mean, median, mode, quartiles, deciles and percentiles for ungrouped and grouped data • Compute and interpret measures of dispersion: Range, interquartile range, average deviation, variance, standard deviation, coefficient of variation and skewness for ungrouped and grouped data • Perform all course required calculations on an electronic hand calculator, and/or on a personal computer using Excel computer software • Execute mathematical operations accurately. • Apply a systematic approach to solve problems.
<p>5% - assignments and quizzes for the second half term</p>	<ul style="list-style-type: none"> • Compute simple and weighted indices, shift and splice index numbers, and use the CPI to calculate absolute purchasing power, real income and time dependent deflated sales • Use the multiplicative TSCI time series model to compute and graph the least square trend (T) values, the seasonal (S) index numbers, the cyclical-irregular (C) index numbers, deseasonalize and interpret given data, and perform short term forecasts • Perform all course required calculations on an electronic hand calculator, and/or on a personal computer using Excel computer software • Investigate, graph, describe and interpret the relationship between two variables and use it as a forecasting tool – simple regression and correlation analysis • Execute mathematical operations accurately. • Apply a systematic approach to solve problems. • Locate, select, organize and document information using appropriate technology and information systems.

	<ul style="list-style-type: none"> Analyze, evaluate and apply relevant information from a variety of sources. Manage the use of time and other resources to complete projects. Take responsibility for one's own actions, decisions and consequences.
25% - second mid term test	<ul style="list-style-type: none"> Compute simple and weighted indices, shift and splice index numbers, and use the CPI to calculate absolute purchasing power, real income and time dependent deflated sales Use the multiplicative TSCI time series model to compute and graph the least square trend (T) values, the seasonal (S) index numbers, the cyclical-irregular (CI) index numbers, deseasonalize and interpret given data, and perform short term forecasts Perform all course required calculations on an electronic hand calculator, and/or on a personal computer using Excel computer software Investigate, graph, describe and interpret the relationship between two variables and use it as a forecasting tool – simple regression and correlation analysis Execute mathematical operations accurately. Apply a systematic approach to solve problems.
40% - final comprehensive examination (mandatory)	<ul style="list-style-type: none"> Prepare various types of statistical charts for an optimum visual representation of data, such as line, bar, component, two-directional, pie and stock charts Choose, prepare and graphically display various characteristics in the frequency distribution of raw data as histograms, frequency polygons and Ogives Compute various measures of central tendencies and locations: the mean, median, mode, quartiles, deciles and percentiles for ungrouped and grouped data Compute and interpret measures of dispersion: Range, interquartile range, average deviation, variance, standard deviation, coefficient of variation and skewness for ungrouped and grouped data Compute simple and weighted indices, shift and splice index numbers, and use the CPI to calculate absolute purchasing power, real income and time dependent deflated sales Use the multiplicative TSCI time series model to compute and graph the least square trend (T) values, the seasonal (S) index numbers, the cyclical-irregular (CI) index numbers, deseasonalize and interpret given data, and perform short term forecasts Perform all course required calculations on an electronic hand calculator, and/or on a personal computer using Excel computer software Investigate, graph, describe and interpret the relationship between two variables and use it as a forecasting tool – simple regression and correlation analysis Investigate, describe and interpret the relationship between more than two variables and use it as a forecasting tool – multiple regression and correlation analysis Execute mathematical operations accurately. Apply a systematic approach to solve problems.

COLLEGE GRADING NUMERICAL EQUIVALENT TABLE

Final Grade	Mark Equivalent	Numeric Value	Final Grade	Mark Equivalent	Numeric Value
A+	90-100%	4.0	C+	67-69%	2.3
A	85-89%	3.8	C	63-66%	2.0
A-	80-84%	3.6	C-	60-62%	1.7
B+	77-79%	3.3	D+	57-59%	1.4

B	73-76%	3.0	D	53-56%	1.2
B-	70-72%	2.6	D-	50-52%	1.0
			F	0-49%	0
			FSP	0	0

PRIOR LEARNING ASSESSMENT AND RECOGNITION

A demonstration of competency in the course learning requirements outlined above.

RELATED INFORMATION

The following information is course-specific:

Course Assessment

It is Algonquin College's policy to give students the opportunity to complete a course assessment survey in each course that they take which solicits their views regarding the curriculum, the professor and the facilities.

Harassment/Discrimination/Violence

Harassment, discrimination and violence will not be tolerated. Any form of harassment (sexual, racial, gender- or disability-related), discrimination (direct or indirect), or violence, whether towards a professor or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College policy. For further information, refer to the Student Instaguide or get a copy of the official policy statements from the Student Association (Directive A8).

Electronic Devices

The use of electronic devices during a class, other than those sanctioned by the course professor, is strictly prohibited. In particular, cell phones are to be turned off and are not to be used during a class. The use of any electronic devices during exams and midterms, other than those sanctioned by the professor in charge of the examination, is strictly prohibited. Students with disabilities, who require electronic devices for their day-to-day functioning and/or exams, are to advise their course professor well in advance. For further information, get a copy of the official policy statements from the Student Association (Directive E39).

Software Copyright

The Copyright Act has been updated to cover computer software. If the police lay charges against someone infringing copyright, the maximum penalties for a summary conviction are "a fine not exceeding twenty five thousand dollars or to imprisonment for a term not exceeding six months or both". The maximum penalties for an indictable conviction are "a fine not exceeding one million dollars or to imprisonment for a term not exceeding five years or both".

Making a copy of a software package for your own use and a back-up copy of a package that you have purchased is allowed in your license agreement. Any other copies would make you liable for the above penalties.

Students with Disabilities

If you are a student with a disability, please identify your needs to the professor and/or the Centre for Students with Disabilities (CSD) so that support services can be arranged for you. You can do this by making an appointment at the CSD, Room C142, Ext. 7683 or arranging a personal interview with the professor to discuss your needs.

Plagiarism

Plagiarism is the submission of work that is in whole or in part someone else's work, which you claim as your own. You should be aware of the college policy of plagiarism (Algonquin Directive E43).

Students, it is your responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

The following information is program-specific:

The following information is school/department-specific:

School of Business Procedures

All programs follow College Directives including Directive A21: **Rights, Freedoms, Responsibilities and Code of Conduct for the Algonquin College Community** (<http://www.algonquincollege.com/directives/sectionA/A21.pdf>).

These Directives are located in the policy section at the back of the Student Instaguide and at: <http://www.algonquincollege.com/directives/>

The **School of Business Procedures** file is located under "Course Information" in your course Blackboard site. These procedures are specific to School of Business programs and either cover issues not included in College Directives or elaborate on them.

Student Academic Responsibilities

Each student is responsible for:

- Knowing the due dates for marked out-of-class assignments.
- Knowing the dates of in-class marked assignments and exercises.

- Maintaining a folder of all work done in the course during the semester for validation claims in cases of disagreement with faculty.
- Keeping both paper and electronic copies of all assignments, marked and unmarked, in case papers are lost or go missing;
- Regularly checking both Blackboard announcements as well as one's Algonquin e-mail account for important messages from both professor and college administration.
- Participating in on-line and classroom exercises and activities as required.
- Retaining course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Exemptions

Exemptions may be granted to students who have successfully passed an equivalent course at a post-secondary institution. If you wish to apply for an exemption contact the coordinator of the course for academic advice. To apply for an exemption, you must contact the Registrar's Office before the deadline listed on your timetable.

Withdrawing From The Course

The last date for withdrawing from courses without academic penalty is printed on your timetable. The student is responsible for notifying the instructor and completing the appropriate form for withdrawal with the College Registrar.

Software Copyright

In the past few years, the Copyright Act has been updated to cover computer software. If the police lay charges against someone infringing copyright, the maximum penalties for a summary conviction are "a fine not exceeding \$25,000 or imprisonment for a term not exceeding six months or both." The maximum penalties for an indictable conviction are "a fine not exceeding one million dollars or imprisonment for a term not exceeding five years or both." Making a copy of software package for your own use, other than a backup copy of package that you have purchased as allowed in your license agreement, would make you liable for the above penalties.

Harassment/Discrimination/Violence

Harassment, discrimination and violence will not be tolerated. Any form of harassment (sexual, racial, gender or disability related), discrimination (direct or indirect), or violence, whether towards a professor or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College policy. For further information, refer to the Student Instaguide or get a copy of the official policy statements from the Student Association (Directive A8).

The following information is College-wide:**Email**

Algonquin College provides all full-time students with an e-mail account. This is the address that will be used when the College, your professors, or your fellow students communicate important information about your program or course events. It is your responsibility to ensure that you know how to send and receive e-mail using your Algonquin account and to check it regularly.

Centre for Students with Disabilities (CSD)

If you are a student with a disability, it is strongly recommended that you identify your needs to the professor and the Centre for Students with Disabilities (CSD) by the end of the first month of the semester in order that any necessary support services can be arranged for you.

Academic Integrity

Adherence to acceptable standards of academic honesty is an important aspect of the learning process at Algonquin College. Academic work submitted by a student is evaluated on the assumption that the work presented by the student is his or her own, unless designated otherwise. For further details consult Algonquin College Directives

E16 (<http://www.algonquincollege.com/directives/sectionE/E16.pdf>)

and E43 (<http://www.algonquincollege.com/directives/sectionE/E43.pdf>).

Course Assessments

It is Algonquin College's policy to give students the opportunity to complete a course assessment survey in each course that they take which solicits their views regarding the curriculum, the professor and the facilities. For further details consult Algonquin College Directive E38

(<http://www.algonquincollege.com/directives/sectionE/E38.pdf>).

Use of Electronic Devices

With the proliferation of small, personal electronic devices used for communications and data storage, Algonquin College believes there is a need to address their use during classes and examinations. During classes, the use of such devices is disruptive and disrespectful to others. During examinations, the use of such devices may facilitate cheating. For further details consult Algonquin College Directive E39

(<http://www.algonquincollege.com/directives/sectionE/E39.pdf>).