| CAPILANO UNIVERSITY |||
COURSE OUTLINE		
Term: **FALL 2017**		Course No. **STAT 301**
Course: **DATA ANALYSIS IN ACTION**		Credits: **3.0**
Section: Office: Tel: **604-986-1911 (Ext.)** email:		

COURSE FORMAT: Three hours of class time (1.5 hours in a classroom and 1.5 hours in a computer lab), plus an additional hour of supplemental activity including 0.5 hours additional lab work delivered through on-line or other activities for a 15-week semester, which includes two weeks for final exams.

PREREQUISITES: 45 credits of 100-level or higher coursework including one of MATH 101, LBST 201, BADM 210, PSYC 213 or TOUR 350.

Note: This is an approved Quantitative/Analytical course for baccalaureate degrees.

COURSE OBJECTIVES:

General: To introduce students to a variety of statistical and data analysis methodologies that are commonly used in practice and to apply these techniques to practical problems using computer applications such as SPSS (or equivalent), R or spreadsheet add-ins.

Student Learning Outcomes: Upon successful completion of the course, it is expected that students will be able to:

- produce accurate statistical graphs and tables to visualize and summarize data using software;
- conduct parametric and non-parametric hypothesis tests for different population parameters (for decision making) and demonstrate the difference between the parametric and non-parametric tests;
- conduct a chi-square test to check dependency of two variables and to determine if the population follows a given distribution;
- calculate and interpret Pearson and Spearman rank correlation coefficients and conduct hypothesis testing to decide on the significance of correlation using software;
- calculate a simple/multiple regression model using software and evaluate the usefulness of a simple/multiple regression model and the significance of each predictor;
- use technology, mathematical and statistical notation, and terminology to present accurate solutions and results.

REQUIRED COURSE MATERIALS:

Textbook: Instructor's Course Pack

Class Notes: Some instructors will have class notes available for purchase in
                       the Bookstore.

RECOMMENDED COURSE SUPPLEMENTS:

Reference Texts: Rice, John A., Mathematical Statistics and Data Analysis, 3rd Ed;
                       Brooks/Cole, 2007.

                       Peck, Olsen & Devore, Statistics and Data Analysis; Cengage
                       Learning, 2016.

                       Agresti & Franklin, Statistics: The Art and Science of Learning
                       From Data, 3rd Ed; Pearson, 2013.

                       Radziwill, Nicole, Statistics (The Easier Way) with R, Lapis
                       Lucera, 2015.

COURSE CONTENT:

Topics	Weeks (approx.)
Summarizing and visualizing data using different statistical graphs, measures of central tendency, spread and location	1.0
Different shapes of probability distributions and the Normal Distribution	1.0
One and two sample (parametric) hypothesis testing for mean, proportion and variance	2.0
Nonparametric hypothesis testing (Wilcoxon, Mann-Whitney, Kruskal Wallis and Friedman test)	2.0
Chi-square tests for independence and for the Goodness of Fit	1.5
Correlation and Simple Linear Regression, Pearson's correlation coefficient and Spearman rank correlation, t tests for significance of correlation and significance of predictors	2.0
Multiple Regression, t test for significance of predictors and F test for usefulness of the model	1.0
Project Proposal and Presentation	1.0
Review	0.5
Tests and Quizzes	1.0
Final Exams	2.0

EVALUATION PROFILE:

Final grades for the course will be computed based on the following schedule:

Tests, Quizzes, Assignments	*45%
Project	10%
Final Exam	*35%
Personal Evaluation	10%
TOTAL	100%

* If the percentage achieved on the Final Exam is higher than the percentage achieved on the "Tests, Quizzes, Assignments" component, then the Final Exam weight will be increased to 45% and the Tests, Quizzes, Assignments component will be decreased to 35%.

While the weighting of individual tests, etc. is at the discretion of the instructor, no single term test will exceed 25% of the final total. The weight of tests, quizzes and assignments will be announced in class in advance.

PERSONAL EVALUATION:

In the absence of exceptional circumstances, which are evaluated at the instructor's discretion, the personal evaluation component of the final grade will be pro-rated to the rest of the grade. For example, a 10% personal evaluation component would be determined by dividing the remaining mark out of 90 by 9. The most common circumstance justifying an increased personal evaluation mark is a student's improved performance in the final examination relative to the term work, which the instructor feels justifies an elevated letter grade.

SUPPLEMENTAL 4TH HOUR ACTIVITY:

Each section has, in addition to the 3 hours of scheduled classroom time per week, a supplemental activity. This activity might be a scheduled tutorial or lab, an on-line activity, a group meeting, or some other activity as indicated by the instructor. Students are expected to participate in this additional activity. If this is not possible, students should consult their instructor to determine how this missed activity can be completed. It is in the student's best interest to ensure that any missed course activity is completed.

GRADING PROFILE: Letter grades will be assigned according to the following guidelines:

A+ 90 - 100%	B+ 77 - 79%	C+ 67 - 69%	D 50 - 59%
A 85 - 89%	B 73 - 76%	C 63 - 66%	F 0 - 49%
A- 80 - 84%	B- 70 - 72%	C- 60 - 62%	

Students should refer to the University Calendar for the effect of the above grades on grade point average.

TESTS: Dates for tests will be announced beforehand in class.

HOMEWORK: It is expected that students spend at least 8 hours per week
                    doing course work outside of class time.

ASSIGNMENTS: Assignments are due at the beginning of class, unless otherwise
                    announced. Late assignments may receive a grade of zero.

OPERATIONAL DETAILS:

University Policies: Capilano University has policies on Academic Appeals (including
                         appeal of final grade), Student Conduct, Cheating and
                         Plagiarism, Academic Probation and other education issues.
                         These and other policies are available on the University website.

Attendance: Regular attendance is essential. If classes are missed, it is the
                    student's responsibility to become aware of all information given
                    out in the classes or tutorials, including times of examinations
                    and assignment deadlines.

Missed Exams: Normally, a score of zero will be given for a missed exam, test,
                    quiz, lab, etc. In some exceptional situations, the student will be
                    permitted to write a make-up test, defer the lab to a later date or
                    to replace the score by other marks.

                    The situations in which a score of zero may be avoided are those
                    for which the student meets **all** of the following conditions:

                    1. Circumstances clearly beyond the control of the student
                        caused the exam, test, quiz, lab, etc. to be missed. Such
                        circumstances include serious illness or injury, or death of
                        close family member. They do **NOT** include forgetting about
                        the test, lack of preparation for the test, work-related or social
                        obligations.

                    2. The student has notified the instructor (or the Science,
                        Technology, Engineering and Mathematics (STEM) office
                        staff, if the instructor is not available) about the missed exam,
                        test, quiz, lab, etc. Such notification **MUST** occur in advance,
                        if possible, or at the latest, on the day of the exam, test, quiz,
                        lab, etc.

                    3. Proof of the circumstances is provided. Proper proof of
                        illness or injury requires a medical certificate from a doctor.

                    4. The student has been fully participating in the course up until
                        the circumstances that prevented the writing of the exam,
                        test, quiz, lab, etc. **Fully participating means attending
                        almost all of the classes and turning in almost all
                        assignments in the course.**

                    The options offered to the student who meets the four conditions
                    are decided by the instructor. They will not necessarily meet the
                    convenience of the student.

Final Exam Period:	Students should note that the final exam period is from xxxx to xxxx *(includes Saturday, xxxx),* and that they can expect to write exams at any time during this period. Exams will not normally be rescheduled because of holidays, work, or other commitments. While efforts are made to spread exams throughout the exam period, an individual's particular course combination may result in exams being scheduled close together, or spread widely through the entire exam period.
Cheating/Plagiarism:	Students caught cheating on a test will normally receive a grade of "F" for the course. First incidents deemed to be particularly serious, or second or subsequent incidents of cheating and plagiarism, will be dealt with under the provisions of the [University Policy on Cheating and Plagiarism](). Plagiarism (including the copying of any part of assignments, laboratory reports and essays) is a serious offence and is a form of cheating.
Incomplete Grades:	Incomplete grades ("I") are given only when special arrangements have been agreed upon with the instructor prior to the end of the semester. Since "I" grades are granted only in exceptional circumstances (usually health problems), their occurrence is rare.
English Usage:	Students are expected to use correct standard English in their written and oral assignments, exams, presentations and discussions. Failure to do so may result in reduced grades in any part of the Evaluation Profile. Please refer to the guidelines provided in the Capilano Guide to Writing Assignments (available from the University Bookstore).
Mathematical Language:	Use of proper Mathematical terminology and notation is an important component of Mathematics. Marks may be deducted for improper usage. For full details, please refer to the Math Department Style Guide at: http://www.capilanou.ca/math/Math-Department-Style-Guide/
Mathematics Learning Centre:	Instructional help and Mathematics learning aids, such as audio visual materials, computer software and reference texts are available to students in the Birch Building (BR289).
Emergency Procedures:	Please read the emergency procedures posted on the wall of the classroom.