COURSE OUTLINE		
TERM: Fall 2018	**COURSE NO: STAT 101**	
INSTRUCTOR:	**COURSE TITLE: Introduction to Statistics**	
OFFICE: LOCAL: **E-MAIL:** @capilanou.ca	**SECTION NO(S):**	**CREDITS: 3.0**
OFFICE HOURS:		
COURSE WEBSITE:		

Capilano University acknowledges with respect the Lil'wat, Musqueam, Squamish, Sechelt, and Tsleil-Waututh people on whose territories our campuses are located.

COURSE PREREQUISITES

Math Placement Test (MPT); or MATH 097; or MATH 091 or BMTH 043 with a minimum "C+" grade; or MATH 096 or BMTH 044 with a minimum "C-" grade; or MATH 123 or BMTH 048 or Pre-calculus 11 or Principles of Math 11 or Foundations of Math 11 or Applications of Math 11 with a minimum "C" grade.

COURSE FORMAT

Three hours of class time, plus an additional hour of supplemental activity delivered through on-line or other activities for a 15-week semester, which includes two weeks for final exams.

CALENDAR DESCRIPTION

An introduction to the language of statistics and some statistical methods, including random variables and their distribution; random sampling, normal distribution, estimation of parameters and testing hypotheses.

COURSE NOTES

STAT 101 is an approved Numeracy course for Cap Core requirements.
STAT 101 is an approved Science & Technology course for Cap Core requirements.
STAT 101 is an approved Science course.
STAT 101 is an approved Quantitative/Analytical course for baccalaureate degrees.
STAT 101 is equivalent to MATH 101 and MATH 204. Duplicate credit will not be granted for this course and MATH 101 or MATH 204.

COURSE STUDENT LEARNING OUTCOMES

On successful completion of this course, students will be able to do the following:

- distinguish between quantitative and categorical data and know which graphical and tabular techniques to apply to each;
- calculate and interpret measures for the centre and spread of a data set;
- demonstrate how and when to use the Normal model;
- demonstrate when correlation and regression analyses are appropriate;

- calculate and interpret correlation coefficient and regression line equations;
- discuss issues associated with collecting and interpreting data from sample surveys and polls;
- explain the role of randomization in sample surveys;
- describe the difference between an experiment and an observational study;
- discuss the basic principles of experimental design;
- calculate probabilities using Venn diagrams, tree diagrams, and the Addition and Multiplication rules;
- describe the concepts of mutually exclusive events, conditional probability, dependent and independent events;
- calculate probabilities using the Binomial distribution;
- describe what is meant by the central limit theorem, and understand its relevance to statistical inference;
- calculate and interpret confidence intervals for estimating population means;
- conduct hypothesis tests for population means;
- use technology appropriately as a tool in problem solving;
- use correct mathematical and statistical notation; and terminology to present solutions and results.

Students who complete this Numeracy course will be able to do the following:

- Apply both analytical and numerical skills to solve problems.
- Summarize and analyze data in quantitative forms.
- Interpret and draw conclusions from an analysis of quantitative data.
- Represent quantitative information in a variety of forms (e.g. symbolically, visually, numerically, and verbally).
- Incorporate quantitative evidence in support of an argument.

Students who complete this Science and Technology course will be able to do the following:

- Apply numerical and computational strategies to solve problems.
- Evaluate scientific information (e.g. distinguish primary and secondary sources, assess credibility and validity of information).
- Demonstrate how a problem, concept or process can be modelled numerically, graphically or algorithmically.
- Participate in scientific inquiry and communicate the elements of the process, including making careful and systematic observations, developing and testing a hypothesis, analyzing evidence, and interpreting results.

REQUIRED COURSE MATERIALS

Textbook: Triola, Mario F. Essentials of Statistics. Custom Edition for Stat 101 at Capilano University. 5th ed. with data sets. Pearson 2015.

Calculator: Students must have a non-symbolic graphing calculator. The Mathematics and Statistics Department recommends a T.I.-83+ or T.I.-84+ calculator with non-

symbolic capabilities. Graphing calculator instruction (in the classroom or in workshops) will only be given using one of these calculators. Any student who intends to use any other calculator must have it approved by their instructor at the start of the semester. For more detailed information on graphing calculators go to: http://www.capilanou.ca/math/Graphing-Calculator-Policies/

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

RECOMMENDED COURSE SUPPLEMENTS

**Student Solutions
Manual:**   Solutions manual for the odd numbered questions in the textbook (available for purchase from the Bookstore).

Reference Texts: Available in the Math Learning Centre (BR289).

COURSE CONTENT

Topics	Text Reference	Weeks (approx.)
Data analysis: Graphical presentation of data, measures of location, spread, relative standing; exploratory data analysis.	1.1-1.5; 2.1-2.4; 3.1-3.4	2.0
Probability: Basic rules, equally likely calculations, addition and multiplication rules, mutually exclusive events, independence, tree and Venn diagrams, conditional probability.	4.1-4.5	1.5
Random Variables: Definition; discrete random variables; distribution, mean and standard deviation. Binomial Distribution: Definition; calculation of mean and standard deviation; Applications.	5.1-5.4	1.5
Normal Distribution: Continuous random variables; Standard and general normal distributions; Applications. Sampling Distributions: Distribution of sample means, sample proportions, Central Limit Theorem. Role of probability in statistical inference.	6.1-6.5	2.0
Estimation: Point and interval estimates for means. Sample size requirements.	7.1,7.3-7.4	1.0
Tests of Hypotheses: Types of error, level of significance. Large sample tests for means, small sample test for means.	8.1,8.2,8.4	1.0
Inferences from Two Samples: Independent Samples and Matched Pairs	9.1,9.3,9.4	1.0
Correlation and Regression	10.1-10.4	1.5
Review		0.5
Tests and Quizzes		1.0
Final Exam Period		2.0

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

Term Work	*55%
Final Exam	*35%
Personal Evaluation	10%
TOTAL	100%

* If the percentage achieved on the Final Exam is higher than the percentage achieved on the Term Work component, then the Final Exam weight will be increased to 55% and the Term Work will be decreased to 35%.

Term work will consist of tests, quizzes, projects and/or assignments. While the weighting of individual tests, etc. is at the discretion of the instructor, no single 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 determined 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.

Incomplete Grades
Grades of Incomplete "I" are assigned only in exceptional circumstances when a student requests extra time to complete their coursework. Such agreements are made only at the request of the student, who is responsible to determine from the instructor the outstanding requirements of the course.

Missed Exams/Quizzes/Labs
Will be assigned a score of zero unless 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 School of STEM office staff, if the instructor is not available) that they will miss the 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 for making up any missed grades offered to the student who meets the four conditions are decided by the instructor. They will not necessarily meet the convenience of the student.
Make-up exams, quizzes and/or tests are given at the discretion of the instructor. They are generally given only in medical emergencies or severe personal crises. Some missed labs or other activities may not be able to be accommodated. Please consult with your instructor.

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.

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).

On-line Communication
Outside of the classroom, instructors will (if necessary) communicate with students using either their official Capilano University email or Moodle; please check both regularly. Official communication between Capilano University and students is delivered to students' Capilano University email addresses only.

UNIVERSITY OPERATIONAL DETAILS

Tools for Success
Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: http://www.capilanou.ca/services/

Capilano University Security: download the CapU Mobile Safety App

Policy Statement (S2009-06)
Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. These and other policies are available on the University website.

Academic Integrity (S2017-05)
Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy S2017-05 for more information: http://www.capilanou.ca/about/governance/policies/Policies/

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

Academic dishonesty is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

Cheating: Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:
- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,

- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

Fraud: Creation or use of falsified documents.

Misuse or misrepresentation of sources: Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

Plagiarism: Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

Self-Plagiarism: Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted.

Prohibited Conduct: The following are examples of other conduct specifically prohibited:
- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

Sexual Violence and Misconduct
All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence and Misconduct Policy and B.401.1 Sexual Violence and Misconduct Procedure.

Emergencies: Students are expected to familiarise themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.