SUMMER 2018 - STAT 201 D100

STATISTICS FOR THE LIFE SCIENCES (3)

Class Number: 3860   Delivery Method: In Person

COURSE TIMES + LOCATION:

Mo, Fr 2:30 PM – 3:20 PM
SSCB 9200, Burnaby

We 2:30 PM – 3:20 PM
SSCB 9201, Burnaby

EXAM TIMES + LOCATION:

Jun 13, 2018
6:00 PM – 8:00 PM
SSCC 9001, Burnaby

Jul 11, 2018
6:00 PM – 8:00 PM
SSCC 9001, Burnaby

Aug 9, 2018
8:30 AM – 11:30 AM
SSCB 9200, Burnaby

Aug 9, 2018
8:30 AM – 11:30 AM
SSCK 9500, Burnaby

INSTRUCTOR:

Rachel Altman
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1 778 782-3288
Office: SC-K10551

PREREQUISITES:

Recommended: 30 units.

Description

CALENDAR DESCRIPTION:

Research methodology and associated statistical analysis techniques for students with training in the life sciences. Intended to be particularly accessible to students who are not specializing in Statistics. Students cannot obtain credit for STAT 201 if they already have credit for - or are taking concurrently - STAT 101, 203, 205, 285, or any upper division STAT course. Quantitative.

COURSE DETAILS:

This course may be applied to the Certificate in Liberal Arts

Lab Instructor: Marie Loughin

Outline:

Aimed at a non mathematical audience, this course discusses procedures that are most commonly used in the summary of statistical surveys and in the interpretation of experimental data. This course covers Chapters 1-9, 11, 12, 15-22, and 24-27 of the textbook. Chapters 7, 11, 19, and 24 are section reviews (and thus are optional). Details of the other chapters are as follows:

1. **Descriptive Statistics (Chapters 1, 2, and 4 of text)** Basic graphical statistics (e.g. bar graphs, pie charts, histograms, time plots, scatterplots) and basic numerical statistics (e.g. mean, median, mode, quartiles, standard deviation, correlation) are

discussed. Scales of measurement are distinguished (e.g. nominal, ordinal, ratio and interval).

2. **Probability (Chapters 3 and 12 of text)** The normal and binomial distributions are introduced along with probability rules.

3. **Sampling (Chapter 8 of text)** Various sampling designs such as simple random sampling are discussed. The implementation of sampling procedures is also presented.

4. **Experiments and Observational Studies (Chapters 8 and 9 of text)** The design of experiments is introduced with an emphasis on randomization, treatments, subjects, factors, pairing and controls. Comparisons are made with observational studies.

5. **Inference (Chapters 15, 16, 17, 18)** Concepts related to the construction of confidence intervals (e.g. sampling distributions, confidence level, width, interpretation, the effect of sample size) are discussed. Also basic concepts related to the testing of hypotheses (e.g. hypotheses, p-values, statistical significance) are presented.

6. **Estimation and Testing for One Sample Problems (Chapters 20 and 22 of text)** Procedures for means and proportions are discussed with an emphasis on the use of SPSS software and the interpretation of results.

7. **Estimation and Testing for Two Sample Problems (Chapters 21 and 23 of text)** Procedures for means and proportions are discussed with an emphasis on the use of SPSS software and the interpretation of results.

8. **One Way ANOVA (Chapter 27 of text)** One way analysis of variance procedures are discussed with an emphasis on implementation using SPSS software and the interpretation of results.

9. **Chi-Square Tests (Chapters 6 and 25 of text)** Procedures for testing in contingency tables are discussed with an emphasis on the use of SPSS software and the interpretation of results. Measures of association are discussed.

10. **Regression (Chapter 5 and 26 of text)** Simple linear regression is introduced with an emphasis on carrying out regression on actual data using SPSS software and the interpretation of results. Related concepts including residuals, least squares fit, testing and the construction of confidence intervals is addressed.

Grading

Assignments	10%
Midterm 1	25%
Midterm 2	25%
Final Exam	40%

NOTES:

Above grading is subject to change.

Students must pass the final exam in order to pass the course.

Materials

MATERIALS + SUPPLIES:

R Studio can be downloaded free of charge at <link to https://www.rstudio.com/>. Alternatively, R statistical software can be downloaded <link to https://cran.r-project.org/ > free of charge from the CRAN website.

REQUIRED READING:

Required Textbook:

The Basic Practice of Statistics (7th ed.) by D. S. Moore, W. I. Notz, and M. A. Fligner. Publisher: W.H. Freeman Publishers

Loose-leaf ISBN: 9781319019334 (available at SFU Bookstore)

Other options are available through the MacMillan Learning website.

Students with Disabilites:
Students requiring accommodations as a result of disability must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Tutor Requests:
Students looking for a Tutor should visit http://www.stat.sfu.ca/teaching/need-a-tutor-.html. We accept no responsibility for the consequences of any actions taken related to tutors.

SFU's Academic Integrity web site http://students.sfu.ca/academicintegrity.html is filled with information on what is meant by academic dishonesty, where you can find resources to help with your studies and the consequences of cheating. Check out the site for more information and videos that help explain the issues in plain English.

Each student is responsible for his or her conduct as it affects the University community. Academic dishonesty, in whatever form, is ultimately destructive of the values of the University. Furthermore, it is unfair and discouraging to the majority of students who pursue their studies honestly. Scholarly integrity is required of all members of the University. http://www.sfu.ca/policies/gazette/student/s10-01.html

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