Course Outline & Introduction

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Introduction to Statistical Data Analysis (ADSC1000)

Fall 2024

THOMPSON RIVERS UNIVERSITY

Topics

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3. Introduction
4. Lectures
5. Grades
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Thompson Rivers University Kamloops campus is located on the traditional lands of the Tk'emlúps te Secwépemc within Secwepemcúl'ecw, the traditional and unceded territory of the Secwépemc.

Course Basics

- Course: Introduction to Statistical Data Analysis (ADSC 1000)
- Lecturer: Ing. Sean Hellingman, Ph.D.
- Meeting times: Tues/Thurs/Fri 15:30 - 16:20 in OM 1241

Course Outcomes

- Apply statistical techniques to extract useful information from data.
- Develop data samples and make estimations.
- Use probability theories to support decision process.
- Analyze the hypothesis and generate statistical inference using data.
- Apply basic regression techniques to analyze data.
- **Understanding of fundamental applications in statistics**

Tentative Topics

- Displaying and Summarizing Data
- Probability
- Design
- Sampling and Estimation
- Hypothesis Testing
- Regression Analysis

Software

- R within the R Studio environment.
  - *Python will be accepted for some topics.*

Moodle

- All important course information will be located on the course moodle page.
  - Course information and announcements
  - Lecture slides
  - Examples
  - Grades

Lectures

- Content is focused on the applied side of statistical theory.
- Combination of lecturing and working through examples.
- Please ask questions as they arise!
- Practice *exercises* are included at the end of the lecture slides for your convenience.
- **Expectations:**
  - Please be respectful to everyone.
  - **Please don't be disruptive to your colleagues.**
  - Please leave your mobile devices on silent.

Lecture Participation

- We are in a computer lab & R is loaded on the computers.
- I will post example code **prior** to lectures.
- It is strongly encouraged to work along through the examples.

Course Evaluation Weights

- Assignments 30%
- Tests 30%
- Project 40%
  - 30% Written report
  - 10% Oral presentation

TRU ADSC Letter Grades

Letter Grade	Numerical Grade	Grade Points	Letter Grade Definitions
A+ **A** **A-**	90–100 85–89 80–84	4.33 4.00 3.67	Excellent. Superior performance showing comprehensive, in-depth understanding of subject matter. Demonstrates initiative and fluency of expression.
B+ **B** **B-**	77–79 73–76 70–72	3.33 3.00 2.67	Very good. Clearly above average performance with knowledge of principles and facts generally complete and with no serious deficiencies.
C+ **C**	65–69 60–64	2.33 2.00	Satisfactory. Basic understanding with knowledge of principles and facts at least adequate to communicate intelligently in the discipline.
C-	55–59	1.67	Pass. Some understanding of principles and facts but with definite deficiencies.
D	50–54	1.00	Minimal pass. A passing grade indicating marginal performance. Student not likely to succeed in subsequent courses in the subject.
F	0–49	0.00	Unsatisfactory. Fail. Knowledge of principles and facts is fragmentary.

Assignments (30%)

- 5 total assignments:
  - Focus on practical applications based on the lectures.
  - Assignments will be posted on moodle with due dates clearly specified.
  - Due dates can be found in the tentative calendar & on moodle.
  - The **lowest** grade will be dropped.
  - Collaboration is **encouraged** but please **submit separate and *different* documents.**
  - **Note:** Due dates aren't always consistent.

- **Expectations:**
  - Assignments are mandatory in this course.
  - Assignments will be submitted (unless otherwise instructed) as PDF files in moodle.
  - Please include your name and TRU ID on your assignment.
  - Late assignments will not be graded.

Tests (30%)

- 2 total tests:
  - Test I is tentatively scheduled for **18 October during the lecture period**.
  - Test II will take place during the exam period.
  - More details about the tests will be uploaded closer to the test dates.

- **Expectations:**
  - Please leave personal items, including mobile phones, in your bag at the front of the class.
  - Please bring and be ready to present English/French language identification (TRU student card) to the tests.
  - **The TRU Academic Integrity policy is always active.**

Project (40%)

- 1 term project:
  - Designed to apply statistical methods to real-life data.
  - Groups of 1-3 students may work on the same project.
  - Tentatively due the last week of classes.
  - Presentations will be scheduled for the last week of classes.
  - *More detailed expectations will be posed soon.*

Office Hours

- Room: OM2812
- Times: Monday 15:00 - 15:50 & Tuesday/Thursday 14:00 - 14:50
  - *Or by appointment*

Email

- Email questions to: shellingman@tru.ca
- I will be happy to help when I can!
- **Email Expectations:**
  - Please, include an informative subject.
  - Please, clearly state your exact problem and what you have already tried.
  - Please do not email questions last minute (you may not get help in time).

Suggested Textbooks

- The lectures, exercises, and assignments should be sufficient.
- I will also post links to open source resources throughout the course.
- If you want more information on these topics:
  - Kohl, K., (2022). *Introduction to statistical data analysis with R (Second Edition)* Retrieved from https://github.com/stamats/ISDR/blob/main/IntroductionToStatistical DataAnalysisWithR_ed2.pdf.
  - Devore, J. L., Berk, K. N., & Carlton, M. A. (2012). *Modern mathematical statistics with applications (Second Edition).* New York: Springer.
  - Evans, J. R., Olson, D. L., & Olson, D. L. (2007). *Statistics, data analysis, and decision modeling.* Upper Saddle River, NJ: Pearson/Prentice Hall.

Student Resources at TRU

- Academic Supports: https://www.tru.ca/current/academic-supports.html
- Health and Wellness: https://www.tru.ca/current/wellness.html
- Diversity & Equity: https://www.tru.ca/current/diversity-equity.html
- Career & Experiential Learning: https://www.tru.ca/current/jobs-careers.html
- Security: https://www.tru.ca/risk-management-services/security.html
- Students' Union: https://trusu.ca/

TRU SAFE App

- App: https://www.tru.ca/risk-management-services/security/tru-safe-app.html
- Apple: https://itunes.apple.com/app/id1151547903
- Android: https://play.google.com/store/apps/details?id=com.cutcom.apparmor.tru

Accessibility

- All TRU students who require accommodations are encouraged to register with Accessibility Services upon registering with TRU.
- Help determine how test and exam accommodations can be arranged.

AI

LLM AI (ChatGPT)

The instructor reserves the right to question the student on any solutions that appear to be directly produced by generative AI.

Course Outline

- Please refer to the official Course Outline document for additional information about the course.

Exercise 1

- Select a topic that you are knowledgeable about:
  - Ask ChatGPT to write a 5 paragraph essay about this topic.
  - How accurate is the essay?
  - Does it sound natural?
  - Would you be comfortable using this essay to teach someone who knew nothing about this topic?