STAD29: Statistics for the Life and Social Sciences

Course Outline

This course

- STAD29 / STA 1007, Statistics for the Life and Social Sciences

- Online for Jan and in-person after:
  - 2 hours or so lectures / week, recorded-asynchoronous at first
  - 1 hour of live tutorial / week, Monday afternoon, on Zoom at first
  - "office hours" also on Zoom at first, by appointment

- Instructor:
  - Ken Butler, ken.butler@utoronto.ca
  - I like sharing what I know about applied statistics and the use of R
  - This course will help you develop further skills to analyze data.
  - Effective communication of results is key, since in applied work you are always trying to convince someone of what you found
  - I want you to demonstrate your understanding and insight about the data you're working with
  - I will help you to work towards this.

Prerequisites

- If you are taking this course as STAD29, you *must* have completed STAC32.
- If you are taking this course as STA 1007:
    - it is best if you know about R and the Tidyverse, at least up to the level of running regressions.
    - please reach out to me as soon as you can so that I can learn something about your background.

Getting help

- Option 1: come to tutorial and ask me.

- Option 2: Quercus discussion board:

  - If it's a question about course procedures, look in this course outline first.
  - Then: look at the Quercus discussion forum. Your question might have an answer there.
  - If you see a question there that you can answer, go ahead and answer it.
  - If you don't see an answer to your question, post your question on the discussion forum.
  - For an issue that is more personal, email me (below).

- Option 3: I am also willing to meet at other times on Zoom if you want to chat. I will set up a mechanism for you to make an appointment.

E-mail

- Use a U of T email (so that I know who you are)
- Use a suitable subject, eg "STAD29"
- State *clearly* how I can help you. (The quicker I can figure this out, the better your chances of a quick reply.)
- Include your name (as U of T knows it) *and* student number
- I aim to reply within one working day.

Course objectives

- You will learn about a number of more advanced statistical methods:
  - what each method is useful for
  - how to run it in R
  - what the results tell you.

- This will be assessed through assignments (approximately weekly).
  - Some questions will ask for software output, and some for explanation.
  - The grading will reward evidence of clear understanding and insight.

- Also (by current plans) written midterm and final exam. See below.

Course materials

The first thing on each line is a link:

- Quercus: lecture videos, hand in assignments, receive grades.

- Course website: course news, reminders, lecture notes and code, assignment solutions, other stuff I want to share with you

- Problems and Solutions in Applied Statistics: what it says; PASIAS for short.

- Computer requirements
  - to get the most out of online tutorials, you will want a working camera and microphone
  - as in C32, can use jupyter.utoronto.ca (needs only web browser) or install R and R Studio on your computer.

- Reference: R for Data Science

Assessment

- Assignments: 8 or so, approx weekly.
  - Best 6 count, 30% of grade.
  - available on Tuesdays, due on Thursdays at 11:59pm
  - based on the previous week's lectures
  - *do not ask for or expect to get help on the assignments themselves.* The time to get help is at tutorial or by working through the practice problems that I will attach to each recorded lecture.
- for those taking this course as STA 1007, you will also need to complete a project using data from your field of study and illustrating a statistical method that you learned in this course
  - project is due on the last day of classes (Apr 12).
- midterm exam, 30%, final exam 40%. Current plan is for in-person. See course website for old exams.
  - you *must pass* the final exam to pass the course.

Grading

- in contrast to STAC32, assignments will be graded more generously, because we will (I hope) have exams this time.
- the grader may still have a few marks to allocate for excellent work.
- My (detailed) solutions will be available after each assignment is handed in.
- Assignments will be accepted up to 2 days late, at a penalty of 1% per *hour*.
- You have two "free" assignments (since only the best 6 count); you may miss these without explanation.
- There are no make-up assessments.
- Things may change during the semester. I reserve the right to make changes to this course outline as we proceed, including taking class votes if needed.
- Detailed course policies are here.

Course material

- More about regression
- Logistic regression
- Dates and times
- Survival analysis
- ANOVA revisited
- Analysis of covariance
- Multivariate ANOVA
- Repeated measures
- Discriminant analysis
- Cluster analysis
- Principal components
- Factor analysis
- Time series (if we have time)
- Multiway frequency tables

Accessibility statement

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations: (416) 287-7560 or by e-mail at `ability@utsc.utoronto.ca`.

Expectations 1/3

- I expect that you will do your own work in this course, and not seek help from outside this course. Expect consequences if you do not.
- All the ideas you need to succeed in this course are contained in the lecture notes, with a few exceptions that I will tell you about. Seeking help from outside the course may confuse you more than it helps.

Expectations 2/3

- You may freely use anything that you learn from the lecture notes, PASIAS, solutions to previous assignments, or from conversation with me.
- Anything from outside the course, for example, material you find on the Internet, **must be cited**. You can do this by giving the URL that it came from, for example "according to https://r4ds.had.co.nz/data-import.html", and then say whatever it is you learned from there. If you learned it in another course, say which course, but be aware that things may be done differently in other courses (see first point on next page).
- If you want credit for any ideas that come from outside the course materials, you *must* say where they came from.
- Citation is a way of making sure that people get credit for ideas that are theirs; not citing when you should is a way of erasing someone's point of view.

Expectations 3/3

- Detailed course policies here.
- I expect you to learn how to do things *as they are done in this course*.
- I am doing my best to give you an opportunity to learn something that will help you in your future. I would like you to take that opportunity.