Course Syllabus

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STA130 (Fall 2022, All Sections): Introduction to Statistical Reasoning and Data Science

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- Mentorship Programs Coordinator: Ivan Nguyen (**sta130@utoronto.ca (mailto:sta130@utoronto.ca)**)

Statistics is about how we can learn from data. Data Science is a relatively new interdisciplinary field that includes the computational aspects of acquiring, managing, and analysing data. Both reasoning and computation play important roles in these related disciplines, so this course will be focussed on computation and communication and give you a broad introduction to many of the ways we can learn from data. We'll use the R programming language and the UofT JupyterHub RStudio environment for statistical computing and you will gain experience communicating statistical ideas and knowledge.

- Students must access UofT JupyterHub cloud resource through personal computers or university computer workstations in order to complete R-based problem sets.

Learning Objectives

1. Implement the computational steps involved in the management and statistical analysis of data using R.
2. Carry out a variety of statistical analyses in R and interpret the results of the analyses.
3. Clearly communicate the results of statistical analyses to technical and non-technical audiences.
4. Identify appropriate uses of statistical methods to answer questions, including their strengths and weaknesses.
5. Describe how statistical methods can be used to learn from data, including methods for description, explanation, and prediction.

Land Acknowledgement ⤷ (https://native-land.ca/)

The land on which the University of Toronto operates has for thousands of years been the traditional land of the **Huron-Wendat ⤷ (http://www.thecanadianencyclopedia.ca/en/article/huron/)** , the **Seneca ⤷ (http://www.thecanadianencyclopedia.ca/en/article/seneca/)** , and most recently, the **Mississaugas of the Credit ⤷ (http://mncfn.ca/)** . Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to live, work, learn, and grow on this land.

The Course

Course Materials: **[GitHub](https://github.com/pointOfive/STA130/blob/main/README.md#welcome)** ⤴ **(https://github.com/pointOfive/STA130/blob/main/README.md#welcome)**	***Course Submissions:*** **Quercus (https://q.utoronto.ca/courses/277...**

In-Person Lecture (not recorded):

- LEC0101: M 9:10-11 am ET **PB B150 (https://map.utoronto.ca/? id=1809#!m/494476)**
- LEC0201: M 2:10-4 pm ET **PB B150 (https://map.utoronto.ca/? id=1809#!m/494476)**

Online Office Hours (not recorded):

- *Professor:* Tues 5:10-7:00 pm ET (All Sections) at **https://utoronto.zoom.us/j/2910373742** ⤴ **(https://utoronto.zoom.us/j/2910373742)**
- *Section TA:* TBA

Due Dates:

- *Problem Sets:* Th 5:00 PM ET
- *Tutorial Work:* F 10:00 PM ET

In Person Tutorial (not recorde

- LEC01XX: F 9:10-11 am ET
- LEC02XX: F 2:10-4 pm ET
  - Search Course Code "STA **(https://timetable.iit.artsci.u**

Course Discussion Board:

- **piazza.com/utoronto.ca/fall2** ⤴ **(http://piazza.com/utoronto.ca/**

Exams and Project:

- *Midterm Exam:* F Oct 28
- *Project Poster Fair:* Th Dec 8
- *Final Exam:* TBD

On average across students, the course should take 10 hours a week with 4 hours allocated for lecture and tutorial time, 3 hours allocated for problem sets and tutorial activities, and the final 3 hours left over for study and review, office hours and piazza discussion boards, and eventual team project work.

Course Grading:

Assessment	Due Date(s)	Weight	Submissions	Missed Deadlines and Absences
Problem Sets	Weekly Th 5 PM ET	7%	On Quercus	Best 7 of 10 automatically scored
Tutorial Work	Weekly F 10 PM ET	14%	On Quercus	Best 7 of 9 automatically scored
Midterm Examination	F Oct 28 in Tutorial	20%	In Class	**Absence Declaration (http://www.illnessverification.utoronto.ca/index.php)** +20% Final
Final Examination	TBA	34%	In Class	**FAS Deferral Absences ONLY (https://www.artsci.utoronto.ca/current/faculty-registrar/petitions/deferred-exams)**

Course Project Poster	Th Dec 8 in Class	20%	On Quercus	**Absence Declaration (http://www.illnessverification.utoronto.ca/index.php)** + Make Up
STA130 Mentorship	TBA	5%	On Quercus	Due by Th Dec 8 No Exceptions

Communication and Getting Help:

- Make sure you're familiar with the course content on **GitHub** ▣ **(https://github.com/pointOfive/STA130/blob/main/README.md#welcome)** and the **Quercus (https://q.utoronto.ca/courses/277998/)** course page.
- Class announcements will be made through **Quercus (https://q.utoronto.ca/courses/277998/)** and will be forwarded to your UofT email addresses.
- Your classmates and **Piazza** are a good places to ask logistical [Where do I find...? How do I...? Could I get Mentorship credit for going to...?] and content [Why is it that...? Why do we...? Why's my code giving me...? What's up with...?] questions.
  - Especially if your question has already been asked and answered on **Piazza...**
- Your classmates, **Office Hours, Tutorials,** and possibly **Lectures** are good places to look for conversational help with course content and concepts and more general advice on how to learn the course material.
  - Many answers to conceptual and (especially) technical questions are often found online.
- The only place to go for regrade requests is the **STA130 Regrade Request Form** ▣ **(https://forms.office.com/Pages/ResponsePage.aspx? id=JsKqeAMvTUuQN7RtVsVSEOG9vGsoowFCsezZPk4C6GJURFE4OFIDSUVGMjVETTFFNkYxV0RTUVU2** .
- The course email **sta130@utoronto.ca (mailto:sta130@utoronto.ca)** is for personal and private communications that are not suited to the other forums. If you email the professor directly he'll eventually forward your communication to
- **sta130@utoronto.ca (mailto:sta130@utoronto.ca)** .

Course Textbook:

The course does not have a dedicated textbook; rather, auxiliary resources will be made available or recommended for you on the course **GitHub** ▣ **(https://github.com/pointOfive/STA130/blob/main/README.md#welcome)** page. If you nonetheless wish to have access to a dedicated textbook resource that is well-aligned with the content of the course, please consider any of the following:

- R for Data Science, by Hadley Wickham and Garrett Grolemund. (Free)
- Hands-On Programming with R, by Garrett Grolemund. (Free)
- Introductory Statistics with Randomization and Simulation by Diez, Barr, and Cetinkaya-Rundel. (Free)
- Modern Data Science with R, by Baumer, Kaplan, and Horton.

Course Policies

Accessibility:

The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom, or course materials, please contact **Accessibility Services (http://accessibility.utoronto.ca)** as soon as possible (**accessibility.services@utoronto.ca (mailto:accessibility.services@utoronto.ca)**). If you have an accommodation letter from your accessibility advisor that is relevant to this course, please do the following:

1. Email your letter to **sta130@utoronto.ca (mailto:sta130@utoronto.ca)** with "Accommodation letter" as part of the email
   subject, CC your advisor and let us know anything else you wish us to know/any questions you have. Please do this as soon as possible after you enrol in the course/receive this syllabus.
2. Ensure you register any assessments that you require an accommodation for with
   Accessibility at least 2 weeks before the assessment date so that our teaching team is notified in a sufficiently timely manner to fulfill your accommodation.

Religious Accommodation:

At the University of Toronto, we are part of a diverse community of students, staff and faculty from a wide range of cultural and religious traditions. If you anticipate missing a course activity due to a religious
observance, please let us know at least three weeks ahead of your observance, and we will provide alternate assignment arrangements.

Late Submissions:

Late Problem set and Tutorial work is not accepted, but only your highest seven marks in both of these categories will only count towards your grade.

Missed Examination Policy:

If you miss the midterm exam on Oct 28 then you must submit the **Illness Absence Declaration (http://www.illnessverification.utoronto.ca/index.php)** by Nov 4 and send your declaration to **sta130@utoronto.ca (mailto:sta130@utoronto.ca)** . In this case your final will be worth 54% and your midterm will be worth 0% of your final grade. If you miss the final exam you should contact your **College Registrar (https://www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices)** immediately, and you will additionally need to rescheduled a deferred exam though a **FAS Deferral Petition (https://www.artsci.utoronto.ca/current/faculty-registrar/petitions/deferred-exams)** .

Missed Project Poster Presentation Policy:

If you miss the poster presentation session on Dec 8 then you must submit the **Illness Absence Declaration (http://www.illnessverification.utoronto.ca/index.php)** by Dec 12th and send your declaration

to **sta130@utoronto.ca** (mailto:sta130@utoronto.ca) . In this case your group must present without you for the groups project grade and you will present your groups project separately in a presentation format by Dec 16. If rescheduling this presentation in this timeframe is not possible, contact your **College Registrar** (https://www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices) by Dec 12 to determine suitable alternative arrangements. If the process for making arrangements is not initiated by Dec 12 then the project poster presentation for the individual in question will receive a "zero mark". If a students project grade is decoupled from their groups project grade due to the above circumstances, the individual student grade and the group project grade will be evaluated according to the rubric regardless of how many students present; and, the individual grade may not exceed (but may be lower than) the group project grade.

Best 7 of 10 Problem Sets and 7 of 9 Tutorial Work Policy:

For students having a "normal" experience acclimating to the UofT context, the "Best 7 of X" policy should provide a comfortable buffer against minor unexpected events or schedule management growing pains. For example

- if you have several assignments due at once and are unable to complete a Problem Set assignment in time
- if you're not feeling well and are unable to attend Tutorial and turn in the Tutorial Work in time

you'll get a "zero mark" for the assignment/activity, but only your **7 best scores** for Problem Sets/Tutorial Work will count towards for the final score.

- *Physical Health*: This policy is intended support your ability to make positive personal and community health choices. This policy should encourage staying home and resting when it's the right thing to do.
- *Personal Well-Being*: It is increasingly understood that belonging and community are extremely important for our emotional health, and coming to class and doing your work is a part of what builds your sense of belonging in our community. Sometimes it can be good to "take a break", too, and this policy certainly covers that.

Contingencies when the "Best 7 of X" policy is not sufficient can be initiated and explored through your **College Registrar** (https://www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices) and can be accommodated upon the recommendation of the Registrar with the following limitations:

- Accommodations involving **three absences** due to health related issues will be considered provided that a notice of special circumstances is made to both (a) the **College Registrar** (https://www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices) and (b) **sta130@utoronto.ca** (mailto:sta130@utorono.ca) within one week of return to University activities.
- Accommodations beyond the "Best 7 of X" policy involving one or two health related absences will not be considered.

- Accommodations beyond the "Best 7 of X" policy involving time management challenges will not be considered.

Extended 7 of X policy	**College Registrar (https://www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices)** + **sta130@utoronto.ca (mailto:sta130@utorono.ca)**	Notice must be provided within one week of return to UofT activities

Marking Concerns:

For consideration regarding marking you must fill out an **STA130 Regrade Request Form** ⬏ **(https://forms.office.com/Pages/ResponsePage.aspx? id=JsKqeAMvTUuQN7RtVsVSEOG9vGsoowFCsezZPk4C6GJURFE4OFIDSUVGMjVETTFFNkYxV0RTUVU2SS4** with the following information:

- Your Name, Student Number, and Tutorial Section Number and the name of your Tutorial TA
- A clear statement of the specific problem(s) and mark(s) in question
- A reference to the relevant course material(s) and how it justifies your answer(s)

If the information you provided is sufficient in light of the above requirements, you will receive a follow up email from **sta130@utoronto.ca (mailto:sta130@utorono.ca)** . If the provided information does not satisfactorily address the above requirements the grade will not be adjusted and no follow up regarding this decision will be provided.

- For project regrade requests ALL project members must agree to identical regrade requests.

The STA130 Mentorship Program

Finding community and support on campus will increase your chances of academic success and fuel your mental well-being, making university life much, much more fun.

- The STA130 Mentorship Program provides a way to create opportunities to start engaging in the community here at UofT. The program entails three pillars of learning & support:
  1. social/personal development
  2. career exploration
  3. peer-to-peer 1:1 mentorship from upper-year students who used to be in your shoes
- Engagement in the Mentorship Program is worth 5% of your mark (2% for each of the first two pillars and 1% for the final pillar). To get credit, attend two events from the first pillar, two events from the second pillars, and meet with an STA130 mentor. Attendance will be recorded and then you'll write and submit a paragraph with your reflections on what you learned from the activity. You can register for the events on the Mentorship SharePoint page via this link **HERE** ⬏ **(https://utoronto.sharepoint.com/sites/ArtSci-STA/Mentorship/SitePages/STA130-Mentorship-Program-Home.aspx)** .

Please allow up to 2 weeks from the date of activity and your reflections submission for the grade to be recorded.

Tips for a successful mentorship program experience

- Start early, don't wait until the last minute and get stuck without activities to attend or mentors to chat with.
- Choose your mentor(s). Check out the **mentor biographies** ⮒ **(https://can01.safelinks.protection.outlook.com/? url=https%3A%2F%2Futoronto.sharepoint.com%2Fsites%2FArtSci-STA%2FMentorship%2FSitePages%2FSTA-130-Mentors(1).aspx&data=05%7C01%7Civan.nguyen%40utoronto.ca%7C18b5fba951554ef6b0f708da90f72c4** to find someone with a common interest or program or experience in an area you're interested in. Come to your meeting prepared with questions; the mentors are friendly and ready to answer questions about it all (academic, social, homesickness, time planning, and more).

While most of the information on the mentorship program is found on the **mentorship SharePoint site** ⮒ **(https://can01.safelinks.protection.outlook.com/? url=https%3A%2F%2Futoronto.sharepoint.com%2Fsites%2FArtSci-STA%2FMentorship%2FSitePages%2FMentorship-Home.aspx&data=05%7C01%7Civan.nguyen%40utoronto.ca%7C18b5fba951554ef6b0f708da90f72c4c%7C78a**, you will submit your **reflections** and receive your **grades through Quercus**. *Note: **If you don't currently have access to the SharePoint link, your access will be updated by September 26***.

Further Resources

***Recognized Study Groups* (https://sidneysmithcommons.artsci.utoronto.ca/recognized-study-groups/)** :

RSGs (https://sidneysmithcommons.artsci.utoronto.ca/recognized-study-groups/) are small study groups made up of students from the same course who meet weekly to learn course content in a collaborative environment. One student **volunteers (https://sidneysmithcommons.artsci.utoronto.ca/recognized-study-groups/)** to be the RSG Leader and helps organize and plan weekly activities. The RSG Leader is not a tutor -- they are learning along with the other group members -- but ideally they have some experience in group facilitation and effective learning techniques. Additionally, a student staff member is assigned to each RSG to help connect you to academic resources and support your group's learning objectives. RSGs are not compulsory, but are **highly recommend (https://sidneysmithcommons.artsci.utoronto.ca/recognized-study-groups/)** .

***Meet to Complete* (https://q.utoronto.ca/enroll/8CXECE)** :

Meet to Complete (https://q.utoronto.ca/enroll/8CXECE) is an online "study with me" space where you can study alongside other
students. Each **Meet to Complete (https://q.utoronto.ca/enroll/8CXECE)** is hosted by a student to welcome you and provide support and

encouragement, if needed. To join **Meet to Complete (https://q.utoronto.ca/enroll/8CXECE)** , **enroll in the Meet to Complete course on Quercus (https://q.utoronto.ca/enroll/8CXECE)** . Learning and studying doesn't need to be lonely!

Private Tutoring Companies:
A good tutor helps you understand the subject area and supports your learning. A good tutor does not just give you the answers. There are no shortcuts to learning. Learning takes time and effort.

- ***WARNING****: Some tutoring companies attempt to sell you plagiarized material for you to submit as your own work. We routinely identify such submissions and initiate academic integrity violation proceedings against students participating in this practice. Academic integrity offences are permanently reported on UofT academic transcripts. If a tutoring company claims to have access to STA130 course materials that they can share with you then they are participating in plagiarism and should be avoided without exception. Please do not put your University of Toronto education at risk by participating in these kinds of unacceptable practices. If you have any questions or concerns about what is okay and what is not in the course please ask your TA for guidance as they know our course best and are here to help you!*

Academic Integrity

You are responsible for knowing the content of the **University of Toronto's Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019)** . We encourage you to discuss course material with each other and ask others for advice; however, it is not permitted to share answers or to directly share R code or written work for anything that is handed in as a course assignment. For example, "For question 2.1 what R function did you use?" is a fair question when discussing course material with others in the class; but, "Please show me your R code for question 2.1" is not an appropriate question. If writing or code is discovered to match another student's submission or outside source, this will be reported as an academic offence. If it is found that submitted code and its corresponding output document do not actually match, this will be reported as an academic offence. Academic offences will be taken seriously and dealt with accordingly. If you have any questions about what is or is not permitted in this course, please seek advice from your tutorial section TA.

- **Exception**: you may discuss and share answers and code with other members of your project team where the effort is understood to be group work.

Plagiarism

You must not present the work of others as your own. This includes, but is not limited to, copying text and including it in your writing without a citation and quotation marks. There are many resources to help you learn more here: **https://www.academicintegrity.utoronto.ca/smart-strategies/ (https://www.academicintegrity.utoronto.ca/smart-strategies/)**

# Intellectual Property Statement

Course material that has been created by STA130 instructors (lecture slides, course activities, quizzes and examinations, etc.) are the intellectual property of the STA130 instructor and is made available to you for your personal use in this course. Sharing, posting, selling or using this material outside of your personal
use in this course is not permitted under any circumstances and is considered an infringement of

Course Summary:

Date	Details	Due
Thu Sep 15, 2022	📝 **Week 1 R Problem Set** [(https://q.utoronto.ca/courses/277998/assignments/910590)](https://q.utoronto.ca/courses/277998/assignments/910590)	due by 5pm
Fri Sep 16, 2022	📝 **Week 1 Tutorial Assignment** [(https://q.utoronto.ca/courses/277998/assignments/910702)](https://q.utoronto.ca/courses/277998/assignments/910702)	due by 10pm
Thu Sep 22, 2022	📝 **Week 2 R Problem Set** [(https://q.utoronto.ca/courses/277998/assignments/910603)](https://q.utoronto.ca/courses/277998/assignments/910603)	due by 5pm
Fri Sep 23, 2022	📝 **Week 2 Tutorial Assignment** [(https://q.utoronto.ca/courses/277998/assignments/910705)](https://q.utoronto.ca/courses/277998/assignments/910705)	due by 10pm
Thu Sep 29, 2022	📝 **Week 3 R Problem Set** [(https://q.utoronto.ca/courses/277998/assignments/910604)](https://q.utoronto.ca/courses/277998/assignments/910604)	due by 5pm
Fri Sep 30, 2022	📝 **Week 3 Tutorial Assignment** [(https://q.utoronto.ca/courses/277998/assignments/910707)](https://q.utoronto.ca/courses/277998/assignments/910707)	due by 10pm
Thu Oct 6, 2022	📝 **Week 4 and 5 "Part 2" R Problem Set** [(https://q.utoronto.ca/courses/277998/assignments/910605)](https://q.utoronto.ca/courses/277998/assignments/910605)	due by 5pm
Fri Oct 7, 2022	📝 **Week 4 Tutorial Assignment** [(https://q.utoronto.ca/courses/277998/assignments/910708)](https://q.utoronto.ca/courses/277998/assignments/910708)	due by 10pm
Thu Oct 13, 2022	📝 **Week 4 and 5 "Part 3" R Problem Set** [(https://q.utoronto.ca/courses/277998/assignments/910606)](https://q.utoronto.ca/courses/277998/assignments/910606)	due by 5pm
Thu Oct 20, 2022	📝 **Week 6 R Problem Set** [(https://q.utoronto.ca/courses/277998/assignments/910637)](https://q.utoronto.ca/courses/277998/assignments/910637)	due by 5pm

Date	Details	Due
Fri Oct 21, 2022	📝 **Week 6 Tutorial Assignment** (https://q.utoronto.ca/courses/277998/assignments/910711)	due by 10pm
Fri Oct 28, 2022	📝 **Course Project Planning** (https://q.utoronto.ca/courses/277998/assignments/910660)	due by 11:59pm
	📝 **Midterm** (https://q.utoronto.ca/courses/277998/assignments/910666)	due by 11:59pm
Thu Nov 3, 2022	📝 **Week 8 R Problem Set** (https://q.utoronto.ca/courses/277998/assignments/910642)	due by 5pm
Fri Nov 4, 2022	📝 **Week 8 Tutorial Assignment** (https://q.utoronto.ca/courses/277998/assignments/910713)	due by 10pm
Thu Nov 17, 2022	📝 **Week 10 R Problem Set** (https://q.utoronto.ca/courses/277998/assignments/910646)	due by 5pm
Fri Nov 18, 2022	📝 **Week 10 Tutorial Assignment** (https://q.utoronto.ca/courses/277998/assignments/910714)	due by 10pm
Thu Nov 24, 2022	📝 **Week 11 R Problem Set** (https://q.utoronto.ca/courses/277998/assignments/910649)	due by 5pm
Fri Nov 25, 2022	📝 **Week 11 Tutorial Assignment** (https://q.utoronto.ca/courses/277998/assignments/910715)	due by 10pm
Thu Dec 1, 2022	📝 **Week 12 R Problem Set** (https://q.utoronto.ca/courses/277998/assignments/910651)	due by 5pm
Fri Dec 2, 2022	📝 **Week 12 Tutorial Assignment** (https://q.utoronto.ca/courses/277998/assignments/910716)	due by 10pm

Date	Details	Due
	📝 **Career/Professional Development Event 1** (https://q.utoronto.ca/courses/277998/assignments/910394)	due by 11:59pm
	📝 **Career/Professional Development Event 2** (https://q.utoronto.ca/courses/277998/assignments/910395)	due by 11:59pm
	📝 **Course Project Presentation Evaluation** (https://q.utoronto.ca/courses/277998/assignments/910659)	due by 11:59pm
Thu Dec 8, 2022	📝 **Course Project Slides Review Evaluation** (https://q.utoronto.ca/courses/277998/assignments/912154)	due by 11:59pm
	📝 **Mentorship Meeting** (https://q.utoronto.ca/courses/277998/assignments/910175)	due by 11:59pm
	📝 **Social/Personal Development Event 1** (https://q.utoronto.ca/courses/277998/assignments/910472)	due by 11:59pm
	📝 **Social/Personal Development Event 2** (https://q.utoronto.ca/courses/277998/assignments/910491)	due by 11:59pm
Sat Dec 31, 2022	📝 **Final** (https://q.utoronto.ca/courses/277998/assignments/910691)	due by 11:59pm
	📝 **final** (https://q.utoronto.ca/courses/277998/assignments/991391)	