

# INF3104H: Data Science Foundations

## Table of contents

<b>1</b>	<b>Contact</b>	<b>1</b>
<b>2</b>	<b>Course description</b>	<b>2</b>
<b>3</b>	<b>Overview</b>	<b>2</b>
<b>4</b>	<b>Content</b>	<b>2</b>
<b>5</b>	<b>Deadlines and weights for student assessments</b>	<b>2</b>
<b>6</b>	<b>Other</b>	<b>3</b>
6.1	Children in the classroom . . . . .	3
6.2	Course Learning Outcomes (CLOs) and Articulation of how Assignments and Activities Assess Attainment of Course Learning Outcomes . . . . .	3
6.3	Relationship to PhD Student Learning Outcomes . . . . .	4
6.4	Academic Integrity . . . . .	4
6.5	Missed Tests/Exams and Late Assignments and Grading Policies . . . . .	4
6.6	Writing Support . . . . .	5
6.7	Health and Wellness . . . . .	5
6.8	Accommodations . . . . .	6
6.9	Declaring an Absence in Acorn . . . . .	6
6.10	Academic Dates & Deadlines . . . . .	7

## 1 Contact

- Course Instructor: Rohan Alexander
- E-mail: rohan.alexander@utoronto.ca

## 2 Course description

Quantitative approaches have a common concern: How can others be confident that our statistical models have been brought to bear on appropriate datasets? This course focuses on the ‘data’ of data science. It develops in students an appreciation for the many ways in which dealing with a dataset can get out-of-hand, and establishes approaches to ensure data science is conducted in ways that engenders trusted findings. It touches on statistical modelling, but focuses on everything that comes before and after modelling, and in doing so ensures modelling and analysis are placed on a firmer foundation. In assessment, students will conduct end-to-end data science projects using real-world data, enabling them to fully understand potential pitfalls, and build a portfolio.

## 3 Overview

The purpose of this course is to develop students who appreciate, and can iterate on, the foundations of data science.

The focus of the learning will be on:

1. actively reading and consider relevant literature;
2. actively using the statistical programming language R in real-world conditions;
3. gathering, cleaning, and preparing datasets; and
4. choosing and implementing statistical models and evaluating their estimates.

Essentially this course provides students with everything that they need to know to be able to do the most exciting thing in the world: use data to tell convincing stories.

## 4 Content

Chapters 1 to 13 of [Telling Stories with Data](#).

## 5 Deadlines and weights for student assessments

Item	Weight (%)	Due date
Paper 1	25	Friday, noon, Week 4
Personal website	3	Friday, noon, Week 6
Paper 2	25	Friday, noon, Week 8
Peer review	7	Friday, noon, Week 8

Item	Weight (%)	Due date
Final Paper	40	Friday, noon, Week 12

## 6 Other

### 6.1 Children in the classroom

Babies (bottle-feeding, nursing, etc) are welcome in class as often as necessary. You are welcome to take breaks to feed your infant or express milk as needed, either in the classroom or elsewhere including [here](#). A list of baby change stations is also available [here](#). Please communicate with me so that I can make sure that we have regular breaks to accommodate this.

For older children, I understand that unexpected disruptions in childcare can happen. You are welcome to bring your child to class in order to cover unforeseeable gaps in childcare.

### 6.2 Course Learning Outcomes (CLOs) and Articulation of how Assignments and Activities Assess Attainment of Course Learning Outcomes

The purpose of the course is to develop the core skills of data science that are applicable across academia and industry. By the end of the course, you should be able to:

1. Engage critically with ideas and readings in data science (demonstrated in all papers).
2. Conduct research in data science in a reproducible and ethical way (demonstrated in all papers).
3. Clearly communicate what was done, what was found, and why in writing (demonstrated in all papers).
4. Understand what constitutes ethical high-quality data science practice, especially reproducibility and respect for those that underpin our data (demonstrated in all papers).
5. Respectfully identify strengths and weaknesses in the data science research conducted by others (demonstrated in peer review).
6. Develop the ability to appropriately choose and apply statistical models to real-world situations (demonstrated in the final paper)
7. Conduct all aspects of the typical data science workflow (demonstrated in all papers).
8. Reflect effectively on your own learning and professional development (demonstrated in the website).

### 6.3 Relationship to PhD Student Learning Outcomes

- Read broadly across data science to understand the extent of knowledge
- Conduct original research
- Work in an independent way
- Communicate work and findings in written form
- Be especially aware of the limitations of the data, and methods, they are using.

### 6.4 Academic Integrity

Please do not plagiarize. In particular, be careful to acknowledge the source of code - if it is extensive then through proper citation and if it is just a couple of lines from Stack Overflow then in a comment immediately next to the code.

You are responsible for knowing the content of the University of Toronto's Code of Behaviour on Academic Matters.

Academic offenses includes (but is not limited to) plagiarism, cheating, copying R code, communication/extra resources during closed book assessments, purchasing labor for assessments (of any kind). Academic offenses will be taken seriously and dealt with accordingly. If you have any questions about what is or is not permitted in this course, please contact me.

Please consult the University's [site](#) on Academic Integrity. Please also see the definition of plagiarism in section B.I.1.(d) of the University's Code of Behaviour on Academic Matters available [here](#). Please read the Code. Please review Cite it Right and if you require further clarification, consult the site [How Not to Plagiarize](#).

### 6.5 Missed Tests/Exams and Late Assignments and Grading Policies

You are expected to manage your time effectively. If no extension has been granted and no accommodation applies, then the late submission of an assessment item carries a penalty of 10 percentage points per day to a maximum of one week after which it will no longer be accepted, e.g. a problem set submitted a day late that would have otherwise received 8/10 will receive 7/10, if that same problem set was submitted two days late then it would receive 6/10.

The Graduate Grade policies are available here: [Policies and Guidelines Graduate - Faculty of Information](#).

## 6.6 Writing Support

Papers and reports should be well-written, well-organized, and easy to follow. They should flow easily from one point to the next. They should have proper sentence structure, spelling, vocabulary, and grammar. Each point should be articulated clearly and completely without being overly verbose. Papers should demonstrate your understanding of the topics you are studying in the course and your confidence in using the terms, techniques and issues you have learned. As always, references must be properly included and cited. If you have concerns about your ability to do any of this then please make use of the writing support provided to the faculty, colleges and the SGS Graduate Centre for Academic Communication.

## 6.7 Health and Wellness

The Faculty of Information has a Wellness Counsellor & Coordinator available to its students. Appointments are available Monday-Friday during the academic year.

Contact Health & Wellness, 416-978-8030 ext. 5, to book an appointment with a Wellness Counsellor or for questions about the counselling service. Students can request that they would like to meet with the “iSchool Counsellor” to access counselling on campus.

Students can also choose to see a counsellor during the academic year and over the summer at the Health & Wellness Centre, located at 700 Bay St., during its hours of operation.

Numerous additional health, wellness and counselling services are offered through the University of Toronto’s Health and Wellness Centre.

You can access free mental health and wellbeing services at Health & Wellness such as same day counselling, brief counselling, medical care, skill-building workshops and drop-in peer support. You can also meet with a Wellness Navigation Advisor who can connect you with other campus and community services and support.

Call the mental health clinic at 416-978-8030 ext. 5 to book an appointment or learn more at [uoft.me/mentalhealthcare](http://uoft.me/mentalhealthcare)

The Health & Wellness Centre’s Medical Services Clinic provides a wide range of medical services for U of T students. These services include routine health care services, such as sexual and reproductive health counselling, allergy care, nutrition consultation, and support with many other health concerns.

Call the medical services clinic at 416-978-8030 ext. 2 to schedule an appointment or explore services online.

## 6.8 Accommodations

Students with diverse learning styles and/or accessibility 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, student services and/or the Accessibility Services Office as soon as possible. Students who believe they require accommodations and are unsure where to begin can speak to an academic advisor in student services for guidance and referrals.

Accessibility Services staff are available by appointment to assess specific needs, provide referrals to supportive services and arrange appropriate accommodations. The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course. Once you have obtained an accommodation plan from Accessibility Services, please share your accommodation letter with your instructor and student services.

Students who have already obtained accommodations from the Accessibility Services Office are encouraged to share their letter with their instructor and with student services in the first week of class. Students should discuss potential accommodations in consultation with their Accessibility Advisor and instructor to understand what may be possible and how the instructor wishes to be informed when an accommodation needs to be actioned. It is the student's responsibility to discuss any extension requests, where possible, in advance of course deadlines.

To book an appointment with an Accessibility Advisor, please connect with the Accessibility Services front desk via email at [accessibility.services@utoronto.ca](mailto:accessibility.services@utoronto.ca) or call (416) 978-8060. Consultation appointments are available to discuss any questions about the Accessibility Services registration process and/or potential accommodation support. The on-location Accessibility Advisor at the Faculty of Information is Michael Mercer.

Weekly drop-in appointments are available with Michael for registered students. For more information, visit Accessibility Services and find his name under the Contacts section.

## 6.9 Declaring an Absence in Acorn

Students who miss an academic obligation and wish to seek academic consideration in a course may declare an absence using the ACORN Absence Declaration Tool. Students who declare an absence in ACORN should expect to receive reasonable academic consideration from their instructor without the need to present additional supporting documentation. Students can only use the ACORN Absence Declaration Tool once per academic term (e.g., the fall term) for a maximum period of 7 consecutive calendar days.

The ACORN Absence Declaration Tool requires students to select the course(s) they wish to have academic consideration granted, as well as provide the email address(es) to whom their course syllabus identifies as the contact (e.g., instructor, advisor). A record of the absence

is sent to the self-provided email(s) at the time of submission, and a receipt of the absence declaration is also sent to the student's University of Toronto email address.

Submitting an absence declaration does not initiate the process of academic consideration. It is the student's responsibility to arrange for academic consideration by contacting the course instructor using the contact information provided in the syllabus.

Students who have already used one absence declaration in a term will be restricted from declaring any further absences using the ACORN Absence Declaration Tool. Students are required to arrange any further academic consideration directly with their instructor and / or student services advisor. Students may be asked to provide supporting documentation as evidence of their absences such as the University approved verification of illness form (VOI).

## **6.10 Academic Dates & Deadlines**

Conflicts with religious observances should be brought to the attention of the course instructor and the Office of the Registrar and Student Services no later than the second week of classes. For more information, please see the Policy on Scheduling of Classes and Examinations and Other Accommodations for Religious Observances.