liberal arts & professional studies | YORK U

Data Analysis Systems

ADMS 4370 Sect: A Fall 2025

Course Information

Course Instructor: Yvonne Xu
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Office Hours & Location: By Appointment

Course Time & Days: W 19:00-22:00
Class Location: **DB 2118**
Course eClass site: York U eClass Portal

Land Acknowledgment

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject of the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region (LA&PS Land Acknowledgement).

Course Overview

Course Description

Introduces Windows-based data processing software and provides an overview of computing concepts and data processing using R. Covers such statistics techniques as data visualization and summary, analysis of contingency tables, linear and logistic regressions, and nonparametric methods. Elective course for: BAS ITEC and BAS HURE. Prerequisite: AP/ADMS 2320 3.00 or AP/ECON 2500 3.00 or MATH 2131 3.00.

Pre-Requisites:

AP/ADMS 2320 3.00 or AP/ECON 2500 3.00 or MATH 2131 3.00.

Course Organization

- In-person Lectures.
- Course announcements, Assignments, and Lecture Materials are posted via eClass,
- Class discussion forum is created on eClass. Students are encouraged to communicate and discuss course-relevant questions and topics on forums.

Optional Course Materials

1. ***An Introduction to Statistical Learning with Applications in R* (2nd ed.)** James, G., Witten, D., Hastie, T., & Tibshirani, R. (2021). Springer. (Free PDF available).
2. ***R for Data Science*.** O'Reilly. Wickham, H., & Grolemund, G. (2017). (Free online version available).
3. ***Statistics***, Robert Pisani, David Freedman and Roger Purves, the 4th edition.
4. ***Linear Statistical Models an Applied Approach***, L. Bowerman and Richard T. O'connel, 2nd Edition
5. ***Applied Logistic Regression***, David W. Hosmer and Stanley Lemeshow, the 2nd Edition
6. ***Categorical and Nonparametric* Data Analysis Choosing the Best Statistical Technique*,*** E.Michael Nussbau***,*** the 2nd Edition, 2024
7. ***Statistics for Management and Economics***, Keller, G.
8. ***Tree-Based Methods for Statistical Learning in R*,** Brandon M. Greenwell, 2022
9. ***Applied Statistics with R***, David Dalpiaz, **https://book.stat420.org/**
10. **UCLA Learning Module R: https://stats.oarc.ucla.edu/r/modules/**
11. **R programming:**
    - R: https://cloud.r-project.org/
    - RStudio: https://rstudio.com/products/rstudio/

Technical Requirements

- Please ensure your eClass account is active and accessible.
- Please ensure you have access to AppsAnywhere and are able to run RStudio https://myapps.yorku.ca/.

Need technical help? Check out the following helpful links for information resources and support:

- Student Guide to eClass
- Zoom@YorkU Best Practices
- Zoom@YorkU User Reference Guide
- eLearning Getting Started (LA&PS eServices)
- Student Guide to Remote and Online Learning

To determine Internet connection and speed, there are online tests, such as Speedtest, that can be run. If you need technical assistance, please consult the University Information Technology (UIT) Student Services webpage or write to askit@yorku.ca.

Course Evaluations

Course Evaluation Chart

Assessment	Due Date	Weight %
Lab Exercise 1	Sept. 17	5%
Quiz 1	Oct. 1	10%
Mid-term	Oct. 22	25%
Lab Exercise 2	Nov. 12	5%
Quiz 2	Nov. 19	10%
Final Project Presentation	Nov. 26	20%
Final Project Report	Dec. 3	25%
		100%

How to Submit Assessments

- All submissions are through eClass.
- Test coverage will be announced during the lecture 1 week prior to the test.

Late Work Policy

No late work is accepted.

Missed Assessments, Tests and Exams

NO make-up assignments, quizzes, mid-term and final project.

How to Use Citations in this Course

- SPARK Student Papers & Academic Research Kit
- Drop-in Research Support, YorkU Libraries
- Writing Centre
- ESL Open Learning Centre

Cited according to the following referencing styles:

  - APA
  - MLA
  - Chicago

Resources to help with citations:

- I need to cite and reference, Learning Commons
- Drop-in Research Support, York U Libraries
- Writing Centre
- Student Papers & Academic Research Kit (SPARK)

Grading

The grading scheme for this course confirms to the 9-point system used in undergraduate programs at York University. For a full description of the York grading system, visit the York University Academic Calendar.

Grade	Grade Point	Percent Range	Description
A+	9	90–100	Exceptional
A	8	80–89	Excellent
B+	7	75–79	Very Good
B	6	70–74	Good
C+	5	65–69	Competent
C	4	60–64	Fairly Competent
D+	3	55–59	Passing
D	2	50–54	Marginally Passing
E	1	40–49	Marginally Failing
F	0	0–39	Failing

Course Schedule

Important Dates

Explore York University's Registrar's Office to find a list of important dates, such as class start/end dates, drop deadlines, holidays and more.

Weekly Course Schedule

Week	Readings and Activities	Assessment Due Dates	Learning Outcomes
Week 1 Sept. 3	1. Introduction to Statistics & Statistical Software; R and RStudio installation		
Week 2 Sept. 10	2. Exploratory Data Analysis (EDA) Role of variables, predictors, and outcomes; Graphical and quantitative techniques, univariate and Multivariate; Correlations;		Lab Exercise 1
Week 3 Sept. 17	3. Probability Concepts & Distributions Normal Approximation and Binomial distribution, Sampling Distribution and the Central Limit Theorem	Lab Exercise 1 Due	
Week 4 Sept. 24	4. Hypothesis Testing and Inference Population means, Difference of two population means, t-test, Population Variance / Standard Deviation, P-value, Confidence Interval		
Week 5 Oct. 1	Linear regression (I) Simple linear regression, Assumptions, Least-square estimation, Maximum-likelihood estimation, correlation coefficient		Quiz 1
Week 6 Oct. 8	Linear regression (II)		

Week	Readings and Activities	Assessment Due Dates	Learning Outcomes
	Multiple linear regression, Residual plots, Variable selection, Outliers and Influential Points		
Week 7 Oct. 22	Case Study and Mid-term		Mid-term
Week 8 Oct. 29	Categorical Data Analysis Relationships between two categorical variables, Contingency Table, Chi-squared Test, McNemar's Test, CMH Comparison.		
Week 9 Nov. 5	Binary logistic regression Significance of the coefficients, confidence interval; Goodness of fit, ROC curve;		Lab Exercise 2
Week 10 Nov. 12	Non-parametric Statistics Mann-Whitney-Wilcoxon test, Spearman rank correlation, Wilcoxon paired samples difference test.	Lab Exercise 2 Due	
Week 11 Nov. 19	Decision Tree (Optional)		Quiz 2
Week 12 Nov. 26	Review and Final Project Presentation		Presentation

Course Policies

Please review the course policies in this section. All students are expected to familiarize themselves with the following information:

- Student Rights & Responsibilities
- Academic Accommodation for Students with Disabilities

Academic Integrity and Conduct

Academic integrity is a fundamental and important value of York University. To maintain a fair and honest learning environment, you are responsible for understanding and upholding academic integrity in all courses and academic activities. You are encouraged to connect with reliable on-campus resources that support your coursework and academic honesty. To better understand the serious consequences of breaching academic honesty policies, familiarize yourself with the *Senate Policy on Academic Conduct*. You can learn more about upholding academic integrity in your courses by exploring SPARK: Academic Integrity Module, LA&PS Academic Honesty and Academic Integrity for Students.

Generative Artificial Intelligence (GenAI)

Students are not permitted to use generative artificial intelligence (AI) in this course. Submitting any work created (in whole or part) through the use of generative AI tools will be considered a violation of York University's *Senate Policy on Academic Conduct*. Using AI apps such as Microsoft Copilot, ChatGPT, DALL-E, translation software among others to complete academic work **without your instructor's knowledge or permission**, is considered a breach under York's Academic Conduct Policy. For more information, please review AI Technology & Academic Integrity: Information for Students.

If you're not sure whether using an AI app for your academic work is acceptable, it is recommended that you:

- Carefully review the guidelines for your assessments
- Check for any messages from your instructor on eClass
- Ask your instructor or TA if they are permitting the use of these tools

Turnitin

To promote academic integrity in this course, you will normally be required to submit your written assignments to Turnitin (on the course's eClass site) for a review of textual similarities and the detection of possible plagiarism. In doing so, you are allowing your material to be included as source documents in the Turnitin.com reference database, where they will be used only for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin service are described on the Turnitin.com website. York students may opt out of using Turnitin. If you wish to opt out, you should contact your instructor as soon as possible.

Accessibility

York University is committed to creating a learning environment which provides equal opportunity to all members of its community. If you anticipate or experience any barriers to learning in this course, please discuss your concerns with your instructor as early as possible. For students with disabilities, contact Student Accessibility Services to coordinate academic accommodations and services. Accommodations will be communicated to Course Directors through a Letter of Accommodation (LOA). Accommodations for tests/exams normally require

three (3) weeks (or 21 days) before the scheduled test/exam to arrange. To learn more, please visit Accommodated Exam/Test Scheduling.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community and making reasonable and appropriate accommodations to adherents for observances of days of religious significance. Should any of the dates specified in this syllabus for course assignments, tests, or deadlines conflict with a date of religious significance, please contact the instructor not less than two (2) weeks (or 14 days) prior to the date for which accommodation is sought. If the requested accommodation is for an exam or falls within the formal examination periods, you must complete and submit a Religious Accommodation Agreement (PDF) at least three (3) weeks (or 21 days) before the start of the exam period.

Academic Consideration for Missed Course Work

This policy applies to course assessments worth 20% or less of your overall course grade and does not apply to exams held during the final examination period. Students may self-declare two (2) 7-day consideration periods each 12-week term and one (1) 7-day consideration period per six-week term. An Attending Physician's Statement (APS) is not required for these self-declared absences. However, an instructor may request a signed APS for the final examination period, coursework worth more than 20% of the course grade and missed work outside of the self-declared academic consideration period(s).

Students can submit their self-declaration(s) for academic consideration using eClass. Students are then responsible for contacting the instructor no later than two (2) business days after the end of the consideration period(s) to arrange details of any accommodation for missed coursework. If you do not do this, you may get a zero (0) on the missed work. Where courses have built-in accommodations already established, the instructor may decline providing additional accommodations under this policy. For further details, please review the *Policy on Academic Consideration for Missed Course Work*.

Final Examination Identification Policy

For final exams in this course, you must present a valid York University official photo identification card (YU-card) to verify your identity. Also, you will need to sign the exam's attendance roster. Learn more about preparing for your exams by reviewing York's Policies on *Conduct of Examinations* as well as the Registrar's Office Examination Tip Sheet.

Intellectual Property

Course materials are designed for use as part of this particular course at York University and are the intellectual property of the instructor unless otherwise stated. Third-party copyrighted materials (such as book chapters, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian copyright law. Students may not publish, post on an Internet site, sell, or otherwise distribute any course

materials or work without the instructor's express permission. Course materials should only be used by students enrolled in this course.

Copying this material for distribution (e.g., uploading material to a commercial third-party website) may lead to a charge of misconduct according to York's *Code of Student Rights and Responsibilities*, the *Senate Policy on Academic Conduct*, and/or legal consequences for copyright violations.

Student Support and Resources

York University offers a wide range of student supports resources and services, including everything from writing workshops and peer mentorship to wellness support and career guidance. Explore the links below to access these on-campus resources:

- Academic Advising is available to provide students support and guidance in making academic decisions and goals.
- Student Accessibility Services are available for support and accessibility accommodation when required.
- Student Counselling, Health & Wellbeing offers workshops, resources and counselling to support your personal wellness and academic success.
- Peer-Assisted Study Sessions (PASS) Program provides free study sessions where students collaborate and enhance their understanding of course content in select courses.
- Student Numeracy Assistance Centre at Keele (SNACK) supports students in courses involving math, statistics, coding and Excel.
- The Writing Centre provides multiple avenues of writing-based support including drop-in sessions, one-to-one appointments, a Multilingual Studio and an Accessibility Specialist.
- Centre for Indigenous Student Services offers a community space with academic, spiritual, cultural and physical support, including writing and learning skills programs.
- ESL Open Learning Centre (OLC) supports students with building proficiency in reading, writing and speaking English.
- Learning Skills Services offers workshops, resources and tips on learning-related topics like time management, note-taking, studying and exam prep.
- Learning Commons links to supports for writing, learning skills, career development, exam preparation and other learning-related resources.
- Roadmap to Student Success is a collection of timely and targeted resources to help students achieve academic, personal and professional success at different stages of their university journey.
- Office of Student Community Relations (OSCR) is responsible for administering the *Code of Student Rights & Responsibilities* and provides critical incident and conflict resolution support.

- Peer Mentorship helps students transition through their first year by connecting them with upper-year students. The mentors can help students find supports and resources. They also lead a community hub on campus.
- goSAFE is staffed by York students and can accompany York community members to and from any on-campus location, such as the Village Shuttle pick-up hub, parking lots, bus stops or residences.

For a full list of academic, wellness and campus resources visit Student Support & Resources.