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Business Statistics

AP/ADMS 2320 Section B
Fall 2026 - Monday

Course Information

Course Instructor: Henry Bartel
E-mail: hbartel@yorku.ca
Office Hours & Location: Before and After Class

Course Time & Days: 7-10pm, Monday
Class Location: SLH A
Course website: eClass

Tutorials or Labs
Please see course website for tutorial sessions.

Land Acknowledgment

First Nations peoples have lived on this part of Turtle Island for millennia, stewarding the land, the water and all that contributes to life in this region. Today, the culture and presence of First Nations, Inuit and Métis peoples enrich the lands and people of this territory.

More than two centuries ago, the Mississauga people welcomed settlers to this territory, providing sustenance and engaging in trade and commerce. Between 1781 and 1820, eight treaties were signed with the Mississaugas of the Credit First Nation, who opened their territory to settlement. Today, York University's Keele Campus is located on Toronto Purchase Treaty, No. 13 lands and is situated on the traditional territory of the Huron-Wendat and Haudenosaunee.

Treaty history is foundational, and it is our collective responsibility to honour the land, as we honour and respect those who have gone before us, those who are here and those who have yet to come. We are grateful for the opportunity to be learning, working and thriving on this land, and we commit to learn the truth and be active in the process of reconciliation.

Course Overview

Course Description

An integrated approach to analyzing business problems from various functional areas. Practical business problems are analyzed using quantitative techniques including probability, statistical inference, estimation and regression as well as non-parametric approaches. Prerequisites: AP/ADMS 1000 3.00; one 12U mathematics course or equivalent. Course credit exclusion: AP/ECON 2500 3.00. PRIOR TO FALL 2009: Prerequisites: AK/ADMS 1000 3.00; one 12U mathematics course or equivalent. Course credit exclusions: AK/ADMS 2320 3.00, AK/ADMS 3320 3.00 (prior to Summer 2005), AK/ECON 3470 3.00.

Course Learning Objectives

By the end of this course, students will be able to:

- Effectively utilize a series of quantitative techniques in real world scenarios
- Provide strategic direction using analytics and problem-solving skills
- Be proficient in in displaying quantitative outcomes both visually and numerically
- Gain an in-depth understanding of basic, intermediate, and advanced statistical methods

Course Format and Organization

All classes will be held on campus. During the lecture, material will be covered as described in the course schedule.

Technical Requirements

Students are required to have access to Microsoft Excel and a non-programmable calculator.

Course Communication Plan and Office Hours

Communication in the course will occur during lecture and through announcements and postings on the course website. If you have course related questions, you can use email to send inquiries or ask during class sessions.

1. Please ensure you read all documentation on the course website.
2. It will be your responsibility to regularly check online posts and your email.

Office hours will be held after each class.

Course Evaluation

Assessment	Due Date	Weight %	Course Learning Outcome
Attendance	Random	5%	Assessment of participation.
Term Test 1	See Course Schedule	30%	Assessment of knowledge pertaining to specific lectures.
Term Test 2	See Course Schedule	30%	Assessment of knowledge pertaining to specific lectures.
Final Exam	See Course Schedule	35%	Assessment of knowledge pertaining to specific lectures.
		100%	

Assessment Descriptions

1. Attendance will be taken at random throughout the semester. Students must be in attendance with no exceptions to count as present in the class. Number of attendances taken is at the discretion of each instructor.
2. The two Term Tests and the Final Examination will be held on campus at the same time for all students.
3. Information concerning the Term Tests and Final Exams will be posted on the course website.
4. The two Term Tests and the Final Examination will be closed book exams. An 8.5 x 11 reference sheet is permitted for each test. This is of your own construction and can include whatever you see fit for the tests. **For Term Tests 1 and 2, you are permitted a one-sided reference sheet. For the final exam, you are permitted a 2-sided reference sheet, including if you are writing a cumulative final exam.** All reference sheets will be checked during the exam.
5. When you come to the exam room, please ensure you have: **YU Student ID (this is now mandatory to write ALL exams), pen/pencil, eraser, non-programmable calculator and your reference sheet.**
6. Both Term Tests and the Final Examination may consist of multiple-choice questions and/or worded questions.

7. If a Term Test is missed, the weight of one, and only one, missed Term Test (30%) will be automatically (no documents such as doctor notes needed) transferred to a cumulative Final Examination. If both Term Tests are missed, the Final Examination will only weigh 65%.
8. The Final Examination will be comprehensive if any one of the two Term Tests is missed. That is, if a student misses one Term Test, he/she will be writing a Final Examination that includes material from the entire semester.
9. **There are no alternative exam dates for Term Tests.**
10. If students miss the Final Examination and have to defer the exam, **the deferred exam will be a cumulative examination**.
11. The Final Examination grades will not be posted by the instructor. Instead, students should check their overall grades from the York official website under their personal accounts some time after the Final Examination.
12. Marks for term tests will be posted on eClass or an alternative site at the discretion of each instructor. Answer sheets for the test will be returned in class.
13. You can request your exams to be re-appraised. However, note that the whole test, not just the part under question, will be re-assessed. Three outcomes are possible, your mark might stay the same; increase; or decrease. This will not be permitted after 1 week from when they are returned.
14. Accommodations must be provided within the first 2 weeks of class and arrangements made with the alternative exam center directly by students. Any conflicts with tests in the course must be provided to the course director 2 weeks prior to the test.

Missed Tests and Exams - See above.

Attendance

1. Attendance will be taken at random throughout the semester. Students must be in attendance with no exceptions to count as present in the class. There is no alternative for the attendance.
2. Attendances can be taken any time during the selected lecture session. ***During Attendance you are not allowed to leave the room even if you signed the sheet, unless it is completed.***
3. You might need to show your photo ID, if asked.
4. Once attendance is completed during the selected lecture session, no name will be added further.
5. There might be more than one attendance taken in one lecture. Your signature needs to be on both sheets for you to be counted as attended that class in full.

Grading

The grading scheme for this course conforms 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	(marginally below 50%)	Marginally Failing
F	0	(below 50%)	Failing

Drop Deadline

The last date to drop the course without receiving a final grade is November 10.

Final Exam Period

The scheduled exam period for the Fall term is December 10-23.

Course Schedule: Weekly Readings and Activities

Required Course Materials

- Textbook: KELLER, G., STATISTICS FOR MANAGEMENT AND ECONOMICS, 11th ed., Cengage Learning Pub ((c) 2018). Earlier editions are NOT SUPPORTED due to errors and different coverage. eBook: $79.95.

Course Schedule

Lecture	Date	Topics	Readings
1	Sept 14	Introduction Graphical Descriptive Techniques 1 & 2	Ch 1 Ch 2 & 3
2	Sept 21	Numeric Descriptive Measures	Ch 4
3	Sept 28	Probability	Ch 6
4	Oct 5	Random Variables & Discrete Probability Distributions	Ch 7
	Oct 12	**READING WEEK**	
Sunday Oct 18		**TERM TEST 1 (1.5 hours) – 10:00am-11:30am** **Coverage: Chapters 1, 2, 3, 4, 6** **Location: Keele Campus**	
5	Oct 19	Continuous Probability Distributions and Data Collection	Ch 8 Ch 5
6	Oct 26	Sampling Distributions and Introduction to Estimation	Ch 9 Ch 10
7	Nov 2	Introduction to Hypothesis Testing	Ch 11
Sunday Nov 8		**TERM TEST 2 (1.5 hours) – 10:00am-11:30am** **Coverage: Chapters 5, 7, 8, 9, 10** **Location: Keele Campus**	
8	Nov 9	Inference About a Population	Ch 12
9	Nov 16	Inference About Comparing Two Populations	Ch 13
10	Nov 23	ANOVA Chi-Squared Tests	Ch 14 (parts) Ch 15 (parts)
11	Nov 30	Simple Linear Regression (computer only) Multiple Regression	Ch 16 (parts) Ch 17 (parts)
		Common Final Examination (Date and time to be announced on registrar/university website)	**Covers:** **Chapters 10, 11, 12, 13, 14, 15, 16 and 17**

Omitted Sections and Coverage

AP/ADMS2320	COURSE CONTENT
Chapters 1 – 3	No omissions
Chapter 4	Omit: Least Squares Method: p. 114 (Cover in Ch 16) Coefficient of determination: p.120 (Cover in Ch 16) 4.5 Applications in Finance: Market Model: p. 125
Chapter 5	No omissions
Chapter 6	No omissions
Chapter 7	Omit: 7.2 Bivariate Distributions: p.209 7.3 Applications in Finance: p.218 7.5 Poisson Distribution: p. 232
Chapter 8	Omit: 8.3 Exponential Distribution: p. 268 8.4 Other Continuous Distributions: p 273
Chapter 9	Omit: 9.2a (Optional) Normal Approximation to the Binomial 9.2b Omitting the Correction Factor for Continuity
Chapter 10	Omit: 10.2c (Optional) Estimating the Population Mean Using the Sample Median
Chapter 11	Omit: Probability of a Type II Error Calculation – Concept and theory still to be covered
Chapter 12	Omit: 12.3g Wilson Estimators: p. 406 12.4 Applications in Marketing: p. 412
Chapter 13	No omissions
Chapter 14	Responsible for Section 14.1 only: p. 518-525
Chapter 15	Responsible for Section 15.1 - 15.3 only.
Chapter 16	Responsible for computer method ONLY Omit: 16.6 Regression Diagnostics I: p. 670
Chapter 17	Omit 17.3 and 17.4 - Regression Diagnostics II and III

Course Policies

All students are expected to familiarize themselves with the following information:

- Common University and Course Policies (deferred exams, 20% rule, etc)
- Student Rights & Responsibilities
- Academic Accommodation for Students with Disabilities
- University and School Policies

Please also review the following course policies:

Generative Artificial Intelligence Usage Policy

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 ChatGPT, GPT-3, DALL-E, translation software among others to complete academic work **without your instructor's knowledge or permission**, is considered to be a breach of academic honesty. For more information, please review AI Technology & Academic Integrity: Information for Students.

Deferred Standing

Deferred standing may be granted to students who are unable to write their FINAL examination at the scheduled time (due to illness or other extenuating circumstances) or who are unable to submit their outstanding course work by the end of the term.

Deferred standing requests for ADMS and DEMS courses should follow the **procedure and registration** outlined on the School's online registration system. The system will issue a ticket number.

Requests should be emailed to the main office of the School of Administrative Studies (apsas@yorku.ca) no later than seven (7) days from date of the final exam (or from the last date to submit term course work, for any request to defer a component other than the final exam). Requests should include your **ticket number** as issued by the online registration system, a completed **Deferred Standing Agreement form** (DSA) and relevant supporting documentation. *Note: As communicated on March 13, 2020, Senate Executive has waived until further notice the requirement for students to submit an Attending Physician's Statement in support of a request for deferred standing or petitions*.

Requests will be considered on their merit and decisions will be made on a case-by-case basis. Decisions will be made available on the online portal. No individualized communication will be sent by the School to students (no letter or e-mails).

To be clear, deferred exams in this course will be cumulative exams and will occur on campus.

Academic Integrity

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 Guiding Principles for LA&PS and Academic Integrity for Students.

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.

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 special significance. Should any of the dates specified in this syllabus for course examinations, tests, or deadlines conflict with a date of religious significance, please contact the instructor within the first three (3) weeks of class. If the date falls within the formal examination periods, you must complete and submit a Religious Accommodation for Examination Form at least three (3) weeks before the start of the exam period.

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 Honesty, and/or legal consequences for copyright violations.

Student Conduct in the Learning Environment

York University is committed to fostering teaching and learning environments that are free of disruptive and/or harassing behaviour, are physically safe, and conducive to effective teaching and learning. Students and instructors are expected to maintain a professional relationship characterized by courtesy, civility, and mutual respect and to refrain from actions disruptive to such a relationship. Individuals who fail to adhere to such standards and who violate University or public law may be subject to disciplinary action by the University.

For more information, see the policies on Disruptive and/or Harassing Behaviour in Academic Situations, the Student Conduct and Responsibilities, and the Code of Student Rights & Responsibilities.

Netiquette for eClass and Online Learning

Students and instructors have a joint responsibility to create and maintain a welcoming and inclusive learning environment. All students are expected to conduct themselves in accordance with the Code of Student Rights and Responsibilities. Please review and familiarize yourself with behaviours that support "netiquette" in virtual classrooms by consulting the Guide to Netiquette and Student Guide to eLearning.

Student Notice of Recording for Online Teaching and Learning

Activities for this may course involve recording, in partial fulfillment of the course learning outcomes. Images, audio, text/chat messaging that have been recorded may be used and/or made available by the University to students enrolled in the course and those supporting the course for the purpose of materials review, for assessment, etc. Recordings will be managed according to the University's Common Record Schedule and will be securely destroyed when no longer needed by the University. Your personal information is protected in accordance with York University's Guidelines on Access of Information and Protection of Privacy and the Freedom of Information and Protection of Privacy Act. Access to online materials, including recordings or live meetings, is

subject to York University's Senate Policy on Computing and Information Technology Facilities.

The University will use reasonable means to protect the security and confidentiality of the recorded information, but cannot provide a guarantee of such due to factors beyond the University's control, such as recordings being forwarded, copied, intercepted, circulated, disclosed, or stored without the University's knowledge or permission, or the introduction of malware into computer system which could potentially damage or disrupt the computer, networks, and security settings. The University is not responsible for connectivity/technical difficulties or loss of data associated with your hardware, software, or Internet connection.

By engaging in course activities that involve recording, you are consenting to the use of your appearance, image, text/chat messaging, and voice and/or likeness in the manner and under the conditions specified herein. In the case of a live stream recording, if you choose not to have your image or audio recorded, you may disable the audio and video functionality. If you choose to participate using a pseudonym instead of your real name, you must disclose the pseudonym to your instructor in advance to facilitate class participation.

You are not permitted to disclose the link to/URL of an event or an event session recording or copies of recording to anyone, for any reason. Recordings are available only to authorized individuals who have been directly provided the above instructions/link for their use. Recordings for personal use, required to facilitate your learning and preparation of personal course/lecture notes, may not be shared with others without the permission of the instructor or event coordinator, and may not be published, posted, linked to, or otherwise made available online, including on social media feeds, even if those feeds are private.

Health and Safety

All York students and instructors share responsibility for the safety and well-being of the community while on York's campuses. Please continue to check YUBetter Together for the latest information on health and safety.

Student Support and Resources

To help you succeed academically, York University offers a wide range of resources and services. Everything from writing workshops and peer mentorship to wellness support and career guidance is available to fulfill our LA&PS students' needs. 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 academic success.
- Peer-Assisted Study Sessions (PASS) Program provides student study sessions for students to collaborate and enhance their understanding of course content in certain courses.
- Student Numeracy Assistance Centre at Keele (SNACK) supports students in courses involving math, stats, 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.
- ESL Open Learning Centre (OLC) supports students with building proficiency in reading, writing, and speaking English.
- Learning Skills Services provides tips for time management, effective study and learning habits, keeping up with coursework, and other learning-related supports.
- Learning Commons provides links to supports for time management, writing, study skills, preparing for exams, and other learning-related resources.
- Roadmap to Student Success provides students with timely and targeted resources to help them achieve academic, personal, and professional success.
- Office of Student Community Relations (OSCR) is responsible for administering the Code of Student Rights & Responsibilities and provides critical incident support.
- 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.