



# Rotman Commerce UNIVERSITY OF TORONTO

## Course Outline

### RSM 314H1S

Sports Analytics

Winter 2019

Course Meets: Wednesday/4:00-6:00/WO 30

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### Course Scope and Mission

This course is intended to apply concepts of analytic management and model based data analysis to the sports world. An emphasis of model building and application of models studied previously, including economics, is intended to deepen the students' ability to apply these skills in other areas as well.

We will discuss the analysis of both data and models pertaining to the business management of sports enterprises, as well as the role that such analytic training can have in making "on the field" decisions. We will do so by addressing papers at the research frontier, since those papers are an opportunity to learn about the latest thinking. The papers will both be interested in sports intrinsically, and interested in sports as a way to assess other theories that are a part of business education.

### Course Prerequisites

ECO220Y

### Required Readings

Course readings will be uploaded to the course website, or a link will be provided. Note that some readings require you to be on the university network or vpn to access. In addition to what is listed below, there will be course notes on each subject.

One major component of the course will be learning to use the statistics package R. To do this, we will be doing some "labs" from Michael Lopez ([statsbylopez.com](http://statsbylopez.com)). Those labs are located linked below, but will also be available at [databricks.com](https://databricks.com). Students should make a (free) community databricks account for doing the R labs and projects.

## Evaluation and Grades

Grading will be based on 3 homeworks (done individually) and a final group project. More details about each will be distributed as the class proceeds.

### Work

Homework Assignments

60%

Final Group Project

40%

### Due Date

See Schedule

See Schedule

## Weekly Schedule (subject to change)

Session	Date	Topic	Readings/Deliverables
1	Jan 9		The Economic Theory of Professional Team Sports, by Stefan Kesenne, Chapter 1, especially 1.3  Hakes, Jahn K., and Raymond D. Sauer. 2006. "An Economic Evaluation of the Moneyball Hypothesis." Journal of Economic Perspectives, 20(3): 173-186  Lab: Intro
		Profits, Wins, and Market Inefficiencies	Lab: Bivariate analysis
2	Jan 16		<a href="http://www.fangraphs.com/library/woba-as-a-gateway-statistic/">http://www.fangraphs.com/library/woba-as-a-gateway-statistic/</a>
		Linear Weights Analytics and Regression	Lab: Multiple Regression
3	Jan 23		
		Logistic Regression: Expected Goals Metrics	Lab: Logistic Regression
4	Jan 30		<a href="http://www.82games.com/comm30.htm">http://www.82games.com/comm30.htm</a>
		Repeatability and adjusted Plus/Minus: Fixed Effects, Shrinkage, Random Effects	Lab: Shrinkage and Repeatability HW1 (Expected Points) Due
5	Feb 6		<a href="http://www.basketballgeek.com/2009/02/17/basketball-on-papers-skill-curves/">http://www.basketballgeek.com/2009/02/17/basketball-on-papers-skill-curves/</a>
		Selection and Counterfactuals: Usage	Lab: Dashboards
6	Feb 13		
		Simulation Methods, Recursive Valuation: Going for it on fourth down	Lab: Simulations
7	Feb 27		<a href="http://www.nber.org/papers/w15347">http://www.nber.org/papers/w15347</a>
		Game Theoretic Analysis	HW2 (plus minus) Due
8	Mar 6		<a href="http://www.sloansportsconference.com/wp-content/uploads/2011/08/Moral-Hazard-in-Long-Term-Guaranteed-Contracts-Theory-and-Evidence-from-the-NBA1.pdf">http://www.sloansportsconference.com/wp-content/uploads/2011/08/Moral-Hazard-in-Long-Term-Guaranteed-Contracts-Theory-and-Evidence-from-the-NBA1.pdf</a>
		Player contracts	<a href="http://www.justinmrao.com/goldman_rao_sloan.pdf">http://www.justinmrao.com/goldman_rao_sloan.pdf</a>
9	Mar 13		
		No class	

10	Mar 20		<a href="http://www.nber.org/papers/w11270.pdf">http://www.nber.org/papers/w11270.pdf</a>
		Measuring Biases to Find Inefficiencies	HW3 (TBA) Due
11	Mar 27		
		Project Presentations	
12	Apr 3		
		Project Presentations	
Final Exam	TBA by FAS		

## **POLICY AND PROCEDURES**

### **Missed Tests and Assignments (including midterm examinations)**

Students who miss a test or assignment for reasons entirely beyond their control (e.g. illness) may submit a request for special consideration. The Request for Special Consideration Form and supporting documentation must be submitted in a timely manner in order for the request to be reviewed.

In such cases, students must notify the Rotman Commerce Program Office on the date of the course deliverable such as a missed test, or assignment missed class (in the case of participation marks), or due date. They must then complete a [Request for Special Consideration Form](#) and submit it along with supporting documentation (e.g. [Verification of Student Illness or Injury form](#)) to the Rotman Commerce Office within **2 business days** of the originally scheduled course deliverable. Students who do not provide appropriate or sufficient supporting documentation will be given a grade of 0 (zero) for the missed course deliverable.

Documentation submitted in support of petitions for missing tests and assignments must be original; no faxed or scanned copies will be accepted.

**Note that the physician's report must establish that the patient was examined and diagnosed at the time of illness, not after the fact. Rotman Commerce will not accept a statement that merely confirms a later report of illness made by the student to a physician.**

### **Late Assignments**

Students who, for reasons beyond their control, are unable to submit an assignment by its deadline must obtain approval from the instructor for a reweighting of other assignments. Because solutions will be posted, no late assignments can be accepted.

### **Accessibility Needs**

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 as soon as possible: [accessibility.services@utoronto.ca](mailto:accessibility.services@utoronto.ca) or <http://www.studentlife.utoronto.ca/as>.

## Academic Integrity

Academic Integrity is a fundamental value essential to the pursuit of learning and scholarships at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the UofT degree that you earn will continue to be valued and respected as a true signifier of a student's individual work and academic achievement. As a result, the University treats cases of academic misconduct very seriously.

### *The University of Toronto's Code of Behaviour on Academic Matters*

<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm> outlines the behaviours that constitute academic misconduct, the process for addressing academic offences, and the penalties that may be imposed. You are expected to be familiar with the contents of this document. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment (this includes collaborating with others on assignments that are supposed to be completed individually).

On test and exams:

- Using or possessing any unauthorized aid, including a cell phone.
- Looking at someone else's answers
- Misrepresenting your identity.
- Submitting an altered test for re-grading.

Misrepresentation:

- Falsifying institutional documents or grades.
- Falsifying or altering any documentation required by the University, including (but not limited to), medical notes.

All suspected cases of academic dishonesty will be investigated by the following procedures outlined in the *Code of Behaviour on Academic Matters*. If you have any question about what is or is not permitted in the course, please do not hesitate to contact the course instructor. If you have any questions about appropriate research and citation methods, you are expected to seek out additional information from the instructor or other UofT resources such as College Writing Centres or the Academic Success Centre.

## Email

At times, the course instructor may decide to communicate important course information by email. As such, all UofT students are required to have a valid UTmail+ email address. You are responsible for ensuring that your UTmail+ email address is set up AND properly entered on the ROSI system. For more information please visit <http://help.ic.utoronto.ca/category/3/utmail.html>

Forwarding your utoronto.ca email to a Hotmail, Gmail, Yahoo or other type of email account is not advisable. In some cases, messages from utoronto.ca addresses sent to Hotmail, Gmail or Yahoo accounts are filtered as junk mail, which means that important messages from your course instructor may end up in your spam or junk mail folder.

**Quercus and the Course Page**

The online course page for this course is accessed through Quercus. To access the course page, go to [q.utoronto.ca](http://q.utoronto.ca) and log in using your UTORid and password. Once you have logged in, you will be at the Quercus Dashboard. On this page you will see all of the courses you are presently enrolled in. If you don't see the course listed here but you are properly registered for the course in ROSI, wait 48 hours.

**Recording Lectures**

Lectures and course materials prepared by the instructor are considered by the University to be an instructor's intellectual property covered by the Canadian Copyright Act. Students wishing to record a lecture or other course material in any way are required to ask the instructor's explicit permission, and may not do so unless permission is granted (note: students who have been previously granted permission to record lectures as an accommodation for a disability are, of course, excepted). This includes tape recording, filming, photographing PowerPoint slides, Blackboard materials, etc.

If permission is granted by the instructor (or via Accessibility Services), it is intended for the individual student's own study purposes and does not include permission to "publish" them in anyway. It is absolutely forbidden for a student to publish an instructor's notes to a website or sell them in any other form without formal permission.