

Data Analytics: Principles and Tools (CS 2034) *DH2144B*

Course Information

Term: Winter 2017

Lecture: 1:30 – 3:30pm

Location: HSB-236

Labs: For lab times and locations, see the [online timetable](#)

Instructor: Oluwakemi Ola

Email: oola@uwo.ca

Office: Middlesex College Rm #27A

Office Hours: by appointment only

Course Description

Traditional Version:

A comprehensive and interdisciplinary introduction to data analytics using modern computing systems, with equal attention to fundamentals and practical aspects. Topics include sources of data, data formats and transformation, usage of spreadsheets, statistical analysis, pattern recognition, textual analysis, data mining, big data, and methods for data presentation and visualization.

Pinterest Version:



Twitter Version:

Data is constantly being generated but not effectively used #Problem

Society needs people who can make sense of this data #Solution

An interdisciplinary active learning approach is used to pass on key concepts and skills #Process and no #PriorSkills is required

Student Learning Outcomes

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

- Describe types, sources, and facets of data
- Use spreadsheets macros to analyze data
- Utilize programming constructs to process data
- Explain relevant statistical analysis and machine learning techniques
- Evaluate different visual artifacts for data presentation
- Choose data analytics tools appropriate for data problems

Course Prerequisites

There are no prerequisites to CS2034.

Course materials

Readings will be assigned during the course.

Course Website

The CS2034B website is accessible through OWL: <https://owl.uwo.ca/portal>

Announcements, assignments, labs, lecture notes, and other course-related information will be posted on this website. It is the responsibility of the student to check this website often.

Course Structure

This course is comprised of three main components, namely:—in-class sessions, lab sessions, and student deliverables.

- ***In-Class Sessions*** will expose students to a variety of data analytics topics primarily through a lecture-based format.
- ***Lab Sessions*** are designed to equip students with data analytics skills through the use of hands-on exercises. Teaching assistants will facilitate the sessions, help troubleshoot, and support your learning process.
 - Labs are mandatory and each student is required to attend the lab session for which you are registered.
 - There will be **no** make-up labs, and students who are absent for a lab do not have the option of attending another lab; however, students who encounter serious health or other personal difficulties are encouraged to contact their Dean's office.
 - **There are 10 labs total but only your top 8 scores will be used.**
 - Students must bring their UWO identification to all labs.
- ***Student Deliverables:*** being that this course is driven by the data problems that plague society in the 21st century, it is crucial that students not only understand principles but also the nuances that challenge society and existing solutions. To this end, the student deliverable component of this course will seek to demonstrate how well each student understands the content as well of its application to existing problems.
 - Assignments help ascertain student's ability to transfer knowledge learned in labs to real-world situations.
 - Exams as scheduled by the Office of the Registrar are cumulative student evaluations that provide a structured assessment of learning.
 - Formal Student Feedback will be in the form of questionnaires which will be incorporated to help improve your learning experience.
- There will be no make-up assignments. If there are other serious medical or compassionate grounds for missing an assignment, please take supporting documentation to the office of the Dean of your faculty, who will contact the instructor. In such cases, the weight of your missed assignment may be shifted to the other assignments.

Your understanding of the course content will be assessed based on the following structure,

Student Evaluation (tentative dates)

Element	Weight	Due
Labs	16%	Weekly throughout the term, except Reading week Labs start week of January 16 th
Assignment 1	5%	Monday, February 6 th (9pm)
Assignment 2	10%	Monday, March 6 th (9pm)
Assignment 3	14%	Monday, April 3 rd (9pm)
Mid-Term	20%	Tuesday, February 14 th Time: 1:30 – 3:30 pm Location: Elborn College 2168A and 2168B
Final	35%	3 hours; TBD

IMPORTANT NOTE: To be eligible to receive a passing grade in the course, your mark on the final exam must be at least 40%, and your weighted average on the assignments must be at least 40%. Otherwise, the maximum overall mark you can receive is 45%. To be eligible to receive a grade of 60% or higher, your mark on the final exam must be at least 50%, and your weighted average on the assignments must be at least 50%. Otherwise, the maximum overall mark you can receive is 58%.

Assignments

Submission:

- Instructions for the submission of assignments will be posted on the course website. It is each student's responsibility to read and follow the instructions. Failure to follow the submission instructions may result in the assignment receiving a mark of zero.
- You will be required to submit each assignment electronically through OWL.

Due dates:

- The date and exact time assignments are due will be given in the assignment specifications.
- The late penalty for assignments is 10% per day late, for a maximum of 2 days, after which assignments will not be marked. Weekends count as one day of lateness.
- No extensions will be given for assignments; however, if a student has serious medical or compassionate grounds, they should take supporting documentation to the Office of the Dean of their faculty and their instructor will be contacted.

Marking:

- Assignments are marked by the Teaching Assistants, who follow marking schemes which I provide them.

Re-marking:

- Appeals of assignment marks should be addressed to the teaching assistant first. If you and the teaching assistant cannot agree, then the teaching assistant will discuss the situation with me, the lecturer.
- At this point, I will inform you by email when the reevaluation process is complete. This could take up to two weeks. *It is important to mention that the reevaluation can result in an increase or decrease in your score, and once done, the new score is final.*

- The initial request for adjustment (made to the Teaching assistant) must be made within a week of the date on which it was first available after marking. (Beyond that date, regrading will not be considered, regardless of when you retrieved your assignment.)

It is each student's responsibility to keep up-to-date backups of assignment disk files in case of system crashes or inadvertently erased files. Students must keep disk copies of all material submitted, as well as the actual graded assignment, to guard against the possibility of errors in recording marks. It is not safe to discard these materials until you are satisfied that your final mark for the course has been computed properly.

If for any reason an assignment is cancelled for the class, then the grades for the remaining assignments will be re-weighted to account for the total weight for the assessment type.

Exams

- There is a midterm exam and a final exam. No electronic devices will be allowed. Students are allowed to bring one single-sided letter-size original hand-written page of notes.
- Students must bring their UWO identification to the exams.
- There will be no makeup midterm exam, except for students requesting a special midterm exam for University recognized reasons. These students must have notified the course instructor and filed documentation with their Dean's Office at least 2 weeks prior to the midterm exam. If there are other serious medical or compassionate grounds for missing the midterm exam, please take supporting documentation to the office of the Dean of your faculty, who will contact the instructor. In such cases, the weight of your midterm exam may be shifted to the final exam, which would then be worth 55% of your final overall grade.
- The final exam is scheduled by the Office of the Registrar during the final exam period. Students are advised not to make travel plans until they have consulted the final exam schedule.
- Computer-marked multiple-choice exams may be screened for similarity by software that checks for unusual coincidences in answer patterns that may indicate cheating.

TA Consulting Schedule

Teaching Assistants and their consulting hours for CS2034 will be posted on the course website and announced during the second or third week of the term once information is available to the instructors.

Email Contact

We may need to send email messages to the whole class or to students individually. Email will be sent to the UWO email address assigned to students by Information Technology Services (ITS) (user_name@uwo.ca). **It is the responsibility of the student to read this email on a regular basis.**

Note that UWO and most other email providers establish quotas or limits on the amount of space available to you. If you let your email accumulate there, your mailbox may fill up and you may lose important email from your instructors. Losing email is not an acceptable excuse for not knowing about the information that was sent.

Students are encouraged to contact their course instructor via email with brief, email appropriate questions regarding personal issues relating to the course. **Issues related to lecture materials or clarification of assignments MUST be posted in the appropriate forum on OWL.**

Before sending an email to an instructor, the student should check the course website (either the outline or forums) to see if the requested information is already there. **Students MUST send email from their UWO ITS account and include CS2034 in the subject line of the email.**

Academic Accommodation for Medical Illness or Distress

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here:

https://studentservices.uwo.ca/secure/medical_document.pdf

Students who are in emotional/mental distress should refer to Mental Health@Western

<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation

Course, Department, University Policies on Ethical Conduct

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

<http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>

- **Plagiarism:** Students must write their assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see the Scholastic Offence Policy in the Western Academic Calendar).
- Your assignments must be your own individual work, not the products of group effort. You may discuss approaches to problems with other students, but the work you submit (programming code, answers to concept questions, etc.) must be an individual effort.
- With each assignment, you are required to confirm that you did the material you have submitted is exclusively your own work and that you understand the course policies concerning plagiarism and individual effort. You are responsible for reading and respecting the departmental policies on Scholastic Offences and Rules of Ethical Conduct. The University of Western Ontario uses software for plagiarism checking.

- The standard departmental policy for assignments that are judged to be the product of academic dishonesty is, for the student's first offence, a mark of zero for the assignment, with an additional penalty equal to the weight of the assignment also being applied to the overall grade.
- The role of tutoring is to help students understand course material. Tutors should not write assignments or take-home tests for the students who hire them. Submitting an assignment that contains material written by a tutor is an academic offence. Having employed the same tutor as another student is not a legitimate defense against an accusation of collusion, should two students hand in assignments judged similar beyond the possibility of coincidence.