

The University of Western Ontario
London, Ontario, Canada Department
of Computer Science

COMPSCI 2034B / DIGIHUM 2144B
Data Analytics: Principles and Tools
Winter 2021

Instructor: Jacob Hunte
Email: jhunte85@uwo.ca

Time: Tuesday 2:30PM – 4:30PM
Place: Online (Zoom)

1 Course Description

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 and databases, statistical analysis, pattern recognition, data mining, big data, and methods for data presentation and visualization.

2 Learning Outcomes

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

- Describe types, sources, and facets of data.
- Use spreadsheets, macros and VBA 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.

3 Textbook

The course is partially delivered through an online, interactive course developed by zyBooks (<https://www.zybooks.com/>); ***each student will be required to purchase the zyBook as the course is done via the interactive course.*** The cost of the course is \$65USD. You will need to create a zyBooks account; you must use your UWO email. The instructions are as follows:

1. **Sign in or create an account at [learn.zybooks.com](https://www.zybooks.com/)**
2. **Enter zyBook code: UWOCOMPSCI2034BHunteSpring2021**
3. **Subscribe**

Please contact support@zybooks.com for details on refunds (e.g. if you drop the course), options to extend your subscription beyond the end of the course or other help with using the zyBook software.

An alternative format (accessibility mode) is available for students using assistive technologies. Please contact accessibility@zyBooks.com for information about alternative formats or to request access to an accessible version of the zyBook.

4 Teaching Assistants

Teaching Assistant (TA) contact information and consulting hour details will be posted on OWL when available.

Teaching assistants will hold an open consulting hour each week. No appointment is required to attend a TA's consulting hour. TA consulting hours will be posted in the 2nd or 3rd week of the semester. No consulting hours will be held during reading week or after April 12th.

5 Lectures

There will be one lecture held each via zoom at the following time:

- Tuesday 2:30PM - 4:30PM

6 Course Website & E-Mail Communication

This course uses the Online Western's Learning (OWL) system (<https://owl.uwo.ca>).

Announcements, assignments, labs, lecture notes, and other course-related information will be posted on this website. It is the responsibility of the student to ensure their UWO account is operational for both E-Mail and using the OWL course site and routinely check both for updates

Before sending questions to the course instructor, please first check the course syllabus (this document), the OWL course site and the OWL course forums before sending your inquiry. **General questions that may be helpful to other students (and do not contain personal information) should be posted to the OWL course forums so that others may benefit from the answer.** E-mail messages should be sent from your UWO e-mail account and include "CS2034" in the subject line to avoid any spam filters.

You can normally expect a response with-in 48 hours during the week. E-mails sent on weekends and holidays will be responded to the following working day. Please ensure enough time is available for a response when asking questions regarding assignments that are nearing a deadline.

7 Evaluation

Element	Weight
Assignments (3)	25%
Labs (11)	15%
Participation	5%
Midterm	20%
Exam	35%

If an assignment, quiz or lab has to be cancelled for any reason, the remaining assignment/quiz/lab weights will be prorated (scaled) to add up to the total weight for that element.

7.1 Assignments

- There will be 3 assignments.
- Tentative assignment schedule (dates subject to change) and weights are as follows:

Assignment #	To Be Posted On	Due On	Weight
1	January 22nd	February 8th	5%
2	February 16th	March 12th	8%
3	March 18th	April 5th	12%

- Assignments are due 5 minutes before midnight (23:55) of the due date.
- All submissions will be submitted electronically. Details will be given in the assignment descriptions.
- Late assignments are strongly discouraged:
 - 15% will be deducted from a late assignment up to 24 hours after the due date/time.
 - 30% will be deducted from a late assignment 24 to 48 hours after the due date/time. – After 48 hours from the due date/time, late assignments will receive a zero grade.
- Assignment descriptions will be posted on the course website by the dates listed above.
- Any changes, updates, and clarifications to assignments will also be posted on the website. It is your responsibility to monitor these pages closely.
- A program that produces the correct output is not necessarily a “working” program; it must also satisfy the specifications given in the assignment description.
- Your assignment solutions are expected to be your own individual work, not the products of group effort. **You may not share your assignment solutions** with another student for any reason nor are you to request solutions from another student or make use of solutions available on-line. Such sharing of solutions is considered a scholastic offence and will be penalized as such.
- It is your responsibility to keep up-to-date off-site backups (e.g. on OneDrive or Dropbox) of assignment files. Retain copies of all material handed in, as well as the graded assignment, to guard against the possibility of lost assignments or errors in recording marks. You should keep these materials until you are satisfied that your final mark for the course has been computed properly.
- Assignments will be marked by the TAs, who follow marking schemes provided by the instructor.
- Every effort will be made to have assignments marked and handed back within 3 weeks after the due date, preferably sooner. When assignment marking has been completed, you will be informed via the course website and/or e-mail.
- You should direct any questions or appeals about marking to your TA. If your discussion with the TA is not satisfactory, you may further discuss the issue with the course instructor.
- A request for an adjustment in an assignment mark must be made within 1 week following the date the assignment is returned. All assignment marks are considered to be final after that date.

- The course instructor reserves the right to completely remark an appealed assignment. This may raise or lower the grade compared to that given by the TA.
- Extensions are only granted for approved accommodations from the Dean's Office, Academic Counselling or SSD (see Sections 9.5 and 9.6).

7.2 Labs

- **Labs start the week of January 18th.**
- **Lab descriptions will be posted on the OWL course site at the beginning of the week and are due at the end of that week.** Any changes, updates, or clarifications to labs will also be posted on the website. It is your responsibility to monitor these pages closely.
- Labs sessions will be hosted by TAs and act as practical tutorial sessions that may cover new material or review concepts discussed in lectures. Collaboration on lab problems with other students is allowed.
- It is expected that you read over lab materials beforehand and come prepared to lab sessions with any required resources or reference material.
- Attendance in labs is limited, **you are required to attend the lab section you are registered in.**
- **Labs can not be made up for in future lab sessions.**
- Labs missed as part of an approved accommodation (e.g. medical illness) will result in the student's lab mark being re-weighted to not include the missed lab. Please contact the course instructor as soon as possible if you have an accommodated lab absence.

7.3 Midterm & Final Exam

- Tentative exam dates are as follows:

Midterm Exam

Date: TBD

Location: OWL

Format: Mixed (Multiple Choice and/or Short Answer and/or Programs)

Final Exam

Date: TBD

Location: OWL

Format: Mixed (Multiple Choice and/or Short Answer and/or Programs)

- Both exams will be comprehensive and may include anything covered in lectures, labs, assignments, and assigned readings up until that point in the course.
- No electronic devices of any kind, including but not limited to calculators, phones, laptops and smart watches, will be allowed during the examinations.
- There will be no make-up midterm exam. Students absent due to an approved accommodation (see Section 9.6) will have their final exam mark reweighed to include the weight of the midterm exam.

8 Scholastic Offences & Academic Dishonesty

To preserve a fair and honest learning environment for all, scholastic offences and any breach of ethical conduct will not be tolerated and punished according to department policy. In addition, to the offences

outlined in the department and university policy (see Section 9.1), the following will be considered academic misconduct:

- Sharing assignment solutions with other students or posting them on-line in a manner that is accessible to other students (e.g. Course Hero, in Facebook groups, via Discord, etc.).
- Using any part of another student's assignment solution including but not limited to formatting and templates.
- Sharing your account or using another student's UWO, OWL or zyBook accounts in any way.
- Attempting to circumvent or in any way manipulate the systems in place for monitoring participation or attendance (zyBooks, etc.).
- Altering a quiz, midterm or exam in any way after it has been graded.
- Misrepresenting work done during labs with the intent to receive a higher lab grade.
- Taking the place of another student in labs sessions, exams, quizzes, etc.
- Any other offences listed in a department or university policy (see Section 9.1).

Assignment will be subject to metadata analysis to detect sharing of files and solutions. For first offences, misconduct on assignments, quizzes and labs will result in a 0% grade for that assignment/lab/quiz in addition to a penalty equal to the weight of the assignment/quiz/lab. First offence relating to misconduct on any participation component will result in a 0% overall participation grade and an additional penalty equal to 10%. Second offences on any course component will result in a 0% overall course grade.

9 University & Department Policies

9.1 Ethical Conduct

Scholastic offences are taken seriously and students are strongly encouraged to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Students must write their essays and 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.

Assignments that are judged to be the result of academic dishonesty will, for the student's first offence, be given a mark of zero with an additional penalty equal to the weight of the assignment also being applied.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

All required papers and assignments may be subject to submission for textual and metadata similarity review to commercial or custom plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking via Turnitin.com will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of this service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Students are responsible for reading and respecting the Computer Science Department's policy on [Scholastic Offences](#) and [Rules of Ethical Conduct](#).

9.2 Tutoring

The role of tutoring is to help students understand course material. Tutors should not write assignments or 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 defence against an accusation of collusion, should two students hand in assignments judged similar beyond the possibility of coincidence.

9.3 Email Contact

We occasionally need to send email messages to the class or to students individually. Such emails are sent to the UWO email address as assigned to you by Information Technology Services (ITS), i.e. your email address @uwo.ca. It is your responsibility to read your email account on a frequent and regular basis, or to have it forwarded to an alternative email address if preferred. See the ITS website for directions on forwarding email.

However, note that the email at ITS (your UWO account) and other email providers may have quotas or limits on the amount of space they dedicate to each account. Unchecked emails may accumulate beyond those limits and you may be unable to retrieve important messages from your instructors. Losing emails is not an acceptable excuse for not knowing about the information that was sent.

Students are encouraged to contact their course instructor via e-mail with brief, e-mail appropriate questions regarding lecture materials or clarification of assignments. However, before sending email to the instructor, the student should check the course website to see if the requested information is already there and post on the OWL forums if appropriate. Students must send emails from their UWO ITS account and include “CS2034” in the subject line of the email.

9.4 Computing Facilities & OWL Forums

Each student will be given an account on the Computer Science Department undergraduate computing facility, GAUL. In accepting the GAUL account, a student agrees to abide by the department’s [Rules of Ethical Conduct](#).

Students are expected to act professionally when making posts to the OWL course forums. All submissions should be relevant to the course, made in the correct subforum and not contain any content that would violate department or university policies including the Student Code of Conduct. Assignment solutions (including partial or incomplete answers) should never be posted to the OWL Forums. When seeking help with an assignment or answering questions, only small code segments or specific technical questions should be posted.

9.5 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 x82147 for any specific question regarding an accommodation.

The policy on Accommodation for Students with Disabilities can be found here: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

9.6 Academic Accommodation for Medical Illness

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

9.7 Support Services

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health at Western (<http://www.uwo.ca/uwocom/mentalhealth>) for a complete list of options about how to obtain help.

The policy on Accommodation for Religious Holidays can be found here: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Students may refer to <https://westernusc.ca/your-services> for services provided by the USC.