

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

COMPSCI 2034B & DIGIHUM 2144B
DATA ANALYTICS: PRINCIPLES AND TOOLS
Winter 2018

Instructor:	Daniel Servos	Time:	Tuesday 1:30PM – 3:30PM
Email:	dservos5@uwo.ca	Place:	HSB-40
Office:	MC25		

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

2 Instructor

Daniel Servos

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Website: <http://CS1.CA>

Office: Middlesex College, Room 25 (MC25)

Office Hours: Tuesday/Thursday by appointment.

Office hour appointments must be requested via e-mail at least 24 hours before the desired date (Tuesday or Thursday). The number of appointments available each day is limited and will be scheduled on a first-come first-served basis. No office hours will be held on the week of February 19th (reading week).

3 Teaching Assistants

Names, e-mails and consulting hours to be announced.

Each teaching assistant will hold an open consulting hour each week starting the week of January 22nd. Exact dates and times to be announced. No TA consulting hours will be held on the week of February 19th (reading week) or after April 6th.

4 Lectures

There will be one lecture held each week in HSB-40 at the following time:

- Tuesday 1:30PM - 3:30PM

Students are expected to bring blank paper and writing implements to each lecture. Use of laptops, tablets and other electronic devices is encouraged and recommended if used for course purposes.

5 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.

6 Course Website

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 account is operational and routinely check this website for updates.**

7 Prerequisites & Antirequisites

There are no prerequisites for COMPSCI 2034B or DIGIHUM 2144B.

8 Textbook

There are no required textbooks. However, freely accessible readings will be assigned throughout the term.

9 Student Evaluation

Element	Weight
Assignments (4)	20%
Labs (11)	15%
Participation	10%
Midterm	20%
Final Exam	35%

- If an assignment or lab has to be cancelled for any reason, the remaining assignment/lab weights will be prorated (scaled) to add up to the total weight for that element.
- **To be eligible to receive a passing grade in the course, your total weighted average on the midterm and final exams must be at least 50% and your total average on the assignments at least 40%.**
- **To be eligible to receive a grade of C (60%) or higher (i.e. to be eligible for Honours Programs), your total weighted average on the midterm and final exam must be at least 60% and your total average on the assignments at least 50%.**

9.1 Assignments

- There will be 4 assignments, worth 5% each.
- Tentative assignment schedule:

Assignment #	To Be Posted On	Due On	Due In
1	January 15th	January 29th	2 Weeks
2	January 29th	February 12th	2 Weeks
3	February 12th	March 5th	3 Weeks
4	March 5th	March 26th	3 Weeks

- 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.**
- 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 2 weeks following the first handed-back day. 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 15 and 16).

9.2 Labs

- Tentative labs schedule (subject to change):

Lab #	Section 2 Thursday 3:30PM	Section 3 Wednesday 4:30PM	Section 4 Friday 11:30AM	Section 5 Monday 4:30PM	Section 6 Thursday 5:30PM
1	January 18th	January 17th	January 19th	January 22nd	January 18th
2	January 25th	January 24th	January 26th	January 29th	January 25th
3	February 1st	January 31st	February 2nd	February 5th	February 1st
4	February 8th	February 7th	February 9th	February 12th	February 8th
5	February 15th	February 14th	February 16th	February 26th	February 15th
6	March 1st	February 28th	March 2nd	March 5th	March 1st
7	March 8th	March 7th	March 9th	March 12th	March 8th
8	March 15th	March 14th	March 16th	March 19th	March 15th
9	March 22nd	March 21st	March 23rd	March 26th	March 22nd
10	March 29th	March 28th	TBA	April 2nd	March 29th
11	April 5th	April 4th	April 6th	April 9th	April 5th

- There will be 11 equally weighted two-hour labs, worth 1.5% each.
- To be eligible for full marks, you must participate and complete at least 10 out of 11 labs.
- See the [Western Timetable](#) for location information.
- Labs will be run 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 and encouraged.
- Lab descriptions will be posted on the course website before the dates listed above. Any changes, updates, and clarifications to labs will also be posted on the website. It is your responsibility to monitor these pages closely.
- It is expected that you read over lab materials beforehand and come prepared to lab sessions with your textbooks and any other required resources or reference material.
- As seating in labs is limited, **you are required to attend the lab section you are registered in.**
- To obtain full marks in a lab session you must attend the lab in person and either complete the lab to the TA's satisfaction or remain in the lab for at least 60 minutes and demonstrate to the TA that you have made good effort towards completing the lab and understanding the material.
- TAs may give a zero or reduced lab mark to students that are late to or do not work on lab material during the lab session. It is expected that students abstain from working on assignments during lab time until they have completed and received a mark for the lab.
- **Labs can not be made up for or submitted via e-mail.**

- Labs missed as part of an approved accommodation (e.g. medical illness) beyond the one allowed absence will result in the student's lab mark being re-weighted to not include the missed lab. Absences, even for accommodated reasons, will still count as/use the one allowed absence.

9.3 Participation

The participation mark is comprised of the following elements:

1. Participation in the OWL course forums.
 - Making posts of relevant, substantial quality that are generally helpful to other students in the course.
 - Posts can be questions about course content or answers to other student's questions.
2. Performance on in-class collaborative immediate feedback assessment quizzes.
 - Up to four quizzes will be given throughout the term.
 - Quizzes are multiple choice tests done during lectures in groups of 4 to 5.
 - Limited notice will be given about exact quiz dates.
3. In-class participation including active learning activities and answering questions.
4. Use of electronic personal response/question system.
 - A electronic system for gathering student question and response may be used during some lectures.
 - Giving relevant and meaningful responses/question will contribute to the participation mark.
5. A number of guest lectures may be given during the term and announced beforehand. Attendance in guest lectures will count towards participation.

The weight of each element is not fixed and performance on one element can compensate for another. For example, a student who performs poorly on in-class quizzes could still get a full participation mark if they participated frequently in the OWL course forums. The determination of a student's participation and weighting of each participation element is up to the sole subjective discretion of the course instructor.

9.4 Midterm & Final Exam

- Tentative exam dates are as follows:

Midterm Exam

Date: Tuesday February 27th (tentative)

Time: 1:30PM to 3:30PM (2 hours)

Location: In-class (HSB-40)

Final Exam

Date: During April final exam period (to be determined)

Time: To be determined (3 hours)

Location: To be determined

- 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.
- One page of handwritten notes will be allowed for both the midterm and final exam. This page must be one-sided and of standard letter (ANSI A 216 x 279 mm) size. Notes must be readable without the use of any special device or magnification. Any notes not conforming to these rules will not be permitted.
- There will be no make-up midterm exam. Students absent due to an approved accommodation (see Section 16) will have their final exam mark reweighed to include the weight of the midterm exam.

10 Policy on Course Conflicts & Lecture Absences

If a student is permitted to register in the course with a conflict or is absent from a lecture, it is the student's responsibility to obtain any other information missed due to their absence. Lecture notes provided by the instructor may not cover all topics, examples, demonstrations, in-class activities, etc. that may be on the midterm/final exam or relevant to assignments. A conflict or unapproved absence does not exempt the student from participation marks, in-class quizzes, guest lecture attendance or writing the in-class midterm. In-class activities and quizzes may not be announced beforehand. It is the responsibility of the student to make arrangements with their conflicting course to ensure they are able to write the midterm. Having a course conflict will not be grounds for appeal, nor will it be considered a valid reason, on its own, for accommodations to assignments, exams, labs, participation marks, or any other course components.

11 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 submission 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.

12 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.**

13 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. **All assignments are individual assignments. You may discuss approaches to problems among**

yourselves; however, the actual details of the work (assignment coding, answers to concept questions, etc.) must be an individual effort.

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](#).

14 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.

15 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: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

16 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.

17 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 <http://westernusc.ca/services> for services provided by the USC.

Students may refer to <http://www.registrar.uwo.ca> for the Registrarial Services.