



## COURSE OUTLINE FALL 2021

	Date	Initials
Prepared by Instructor	3-Sep	MGU
Approved by Head	3-Sep	amk

### 1. Calendar Information

#### ENSF 612

#### Engineering Large Scale Analytics Systems

Sources and characteristics of large-scale, i.e., big data. Fundamentals concepts of big data analytics. Benefits of big data analytics to the industry. Problems of big data analytics. Programming paradigms and middleware technologies for scalable data analysis. Algorithm, application and frameworks of large-scale data analysis.

Course Hours: 3 units; H (3-2)

Academic Credit: 3

Calendar Reference: <http://www.ucalgary.ca/pubs/calendar/current/engineering.html>

### 2. Learning Outcomes

At the end of this course, you will be able to:

- 1 Define the characteristics of large scale data, i.e., big data
- 2 Through real-world use cases, identify how big data analytics can be beneficial to the various business domains
- 3 Get familiar with the commonly used big data technologies, such as Spark to analyze large scale data in a scalable manner
- 4 Implement common big data algorithms and modeling techniques that drive big data analysis in various domains
- 5 Work collaboratively with peers on large-scale online data using big data analytics techniques
- 6 Communicate with peers on the latest advances in big data analytics and technologies

### 3. Timetable

Section	Day(s) of the Week	Time	Location
L01	MF	3:00:00 PM- 4:15:00 PM	75

### 4. Course Instructors

Course Coordinator

Section	First Name	Family Name	Phone	Office	Email
L01	Gias	Uddin	613-866-8610	ICT 352B/C	<a href="mailto:gias.uddin@ucalgary.ca">gias.uddin@ucalgary.ca</a>

Other Instructors

---

#### Teaching Assistants

Section	First Name	Family Name	Phone	Office	Email
L01	Das	Ajoy			<a href="mailto:ajoy.das@ucalgary.ca">ajoy.das@ucalgary.ca</a>
L01	Alaman	Abdullah			<a href="mailto:mdabdullahal.amin@ucalgary.ca">mdabdullahal.amin@ucalgary.c</a>

### 5. Assessments

The following examinations will be held in this course:

1. Assignments - 2 (take home, 48 hours)
2. Project - 1 (deliverable: project source code and data)
3. Presentation - 3 (first on project idea, second on project progress, and third on project completion)
4. Quizzes - 2 (take home, 48 hours)
5. Midterm Exam - 1 (take home, 48 hours)
6. A final report at the end of the course (date Dec 15, 2021) will be due based on the project.

### 6. Use of Calculators in Examinations

You may use any calculator you wish for studying and completing lab reports. However, you must use one of the approved Schulich School of Engineering calculators for quizzes and exams. These calculators are the Casio 260 fx Solar, the Casio 300 MS, and the Texas Instruments TI30XIIS. Please note that no laptop computers, tablets, personal digital assistants, cellular phones, or other electronic devices will be permitted during quizzes and

### 7. Final Grade Determination

The final grade in this course will be based on the following components:

Component	Learning Outcome(s) Evaluated	Weight
Assignments	1-3	10%
Quizzes	1-3	10%
Midterm Examination	1-3	25%
Project Presentations (Group)	1-6	15%

Project Code and Data Quality (Group)	1-6	20%
Project Final Report (Group)	1-6	20%

**Total:** 100%

**Notes:**

Conversion from a score out of 100 to a letter grade will be done using the conversion chart shown below. This grading scale can only be changed during the term if the grades will not be lowered.

Letter Grade	Total Mark (T)
A+	$T \geq 95.0\%$
A	$\leq T < 95.0\%$
A-	$\leq T < 90.0\%$
B+	$\leq T < 85.0\%$
B	$\leq T < 80.0\%$
B-	$\leq T < 75.0\%$
C+	$\leq T < 70.0\%$
C	$\leq T < 65.0\%$
C-	$\leq T < 60.0\%$
D+	$\leq T < 56.0\%$
D	$\leq T < 53.0\%$
F	$T < 50.0\%$

## 8. Textbook

No textbook required

The following textbook(s) is required for this course:

---

The following textbook(s) is recommended for this course:

---

## 9. University of Calgary Policies and Supports

### \*SSE ADVISING AND POLICIES

All Schulich School of Engineering students have access to a D2L site titled "Engineering Student Centre". Students have a responsibility to familiarize themselves with the policies available on this site.

### \*ACADEMIC MISCONDUCT

Academic Misconduct refers to student behavior which compromises proper assessment of a student's academic activities and includes: cheating; fabrication; falsification; plagiarism; unauthorized assistance; failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

For information on the Student Academic Misconduct Policy and Procedure please visit:

<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Academic-Misconduct-Policy.pdf>

<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Academic-Misconduct-Procedure.pdf>

Additional information is available on the Academic Integrity Website at

<https://ucalgary.ca/student-services/student-success/learning/academic-integrity>.

### \*ACADEMIC ACCOMODATION

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The Student Accommodations policy is available at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>.

Students needing an accommodation based on disability or medical concerns should contact Student Accessibility Services (SAS) in accordance with the Procedure for Accommodations for Students with Disabilities

(<https://www.ucalgary.ca/policies/files/policies/https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>). SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/).

### \*INSTRUCTOR INTELLECTUAL PROPERTY

Course materials created by instructors (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

### \*FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary.

### \*COPYRIGHT LEGISLATION

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Acceptable-Use-of-Material-Protected-by-Copyright-Policy.pdf>) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Non-Academic-Misconduct-Policy.pdf>.

### \*MEDIA RECORDING (if applicable)

Please refer to the following statement on media recording of students:

[https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP\\_FINAL.pdf](https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP_FINAL.pdf)

#### *\*Media recording for lesson capture*

The instructor may use media recordings to capture the delivery of a lecture. These recordings are intended to be used for lecture capture only and will not be used for any other purpose. Although the recording device will be fixed on the Instructor, in the event that incidental student participation is recorded, the instructor will ensure that any identifiable content (video or audio) is masked, or will seek consent to include the identifiable student content to making the content available on University approved platforms.

#### *\*Media recording for self-assessment of teaching practices*

The instructor may use media recordings as a tool for self-assessment of their teaching practices. Although the recording device will be fixed on the instructor, it is possible that student participation in the course may be inadvertently captured. These recordings will be used for instructor self-assessment only and will not be used for any other purpose.

#### *\*Media recording for the assessment of student learning*

The instructor may use media recordings as part of the assessment of students. This may include but is not limited to classroom discussions, presentations, clinical practice, or skills testing that occur during the course. These recordings will be used for student assessment purposes only and will not be shared or used for any other purpose.

## SEXUAL VIOLENCE POLICY

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>

## \*OTHER IMPORTANT INFORMATION

Please visit the Registrar's website at: <https://www.ucalgary.ca/registrar/registration/course-outlines> for additional important information on the following:

- Wellness and Mental Health Resources
- Student Success
- Student Ombuds Office
- Student Union (SU) Information
- Graduate Students' Association (GSA) Information
- Emergency Evacuation/Assembly Points
- Safewalk

## 10. Statements Specific to Fall 2021

### Course Format and Scheduling

Course content will be delivered through a combination of both synchronous and asynchronous online learning. Some course material will be covered in real-time online sessions held during registrar-scheduled class times for the course, and other content will be covered through asynchronous online learning, which students can access at times convenient to them. Students are responsible for all content covered in both types of delivery. Students are expected to attend synchronous class sessions at the designated time, and to engage with asynchronous material in a timely manner in order to keep up with course content and deliverables. All the course lecture slides will be posted in the course online page D2L. Students will be informed beforehand on the delivery mode of lecture for each week in at least one week in advance of the week.

Please note that this course has a project deliverable per group, where a group consists of 3 students. Each group needs to do 3 presentations to provide update on the project. The presentations will be conducted in real-time over zoom.

### Expectations for Attendance and Engagement in Sessions

Active engagement in class and with course material is essential in any course. In the online context, students must take increased ownership of their learning.

Expectations for attendance at synchronous sessions are the same as they are in a face-to-face course. Students are expected to actively attend synchronous sessions and adhere to class norms. These include:

- Having the camera on during synchronous sessions (unless advised otherwise by instructor)
- Keeping the microphone on mute unless called on by the instructor (or participating in oral discussion)
- Using the features and tools in Zoom as requested by the instructor
- Communicating in a professional and respectful manner at all times

If it appears that you are not actively engaged in the class (for example, not responding to the instructor, not joining breakout rooms, etc.), your instructor reserves the right to remove you from the Zoom session.

### Guidelines for Completing and Submitting Coursework

Please submit all assignments electronically using the dropbox in D2L. Assignments may be submitted in Word or PDF format. Assignments should have a file name as follows: "First Name Last Name Assignment Number" (e.g., Alex Smith Assignment 2). Assignments must be submitted by 11:59pm on their due date. It is the student's responsibility to keep a copy of each submitted assignment and to ensure that the proper version is submitted

## **11. Additional Course Information**