



Big Data Management on the Cloud

CSE3BDC

LMS Subject link:

<https://lms.latrobe.edu.au/course/view.php?id=131247>

Student cohort

SUBJECT LEARNING GUIDE

Teaching Period Semester 1, 2023

Campus

Bundoora

Subject Coordinator: Zhen He

Instance Coordinator: Zhen He

SUBJECT DETAILS

Subject Code:	CSE3BDC
Subject Title:	Big Data Management on the Cloud
Teaching Period:	Semester 1
Location(s):	ELT LT 02
Credit Points:	15
Subject Delivery Mode:	Face to face
AQF Level:	undergraduate
Subject relationships:	Co-taught with CSE5BDC

ENROLMENT REQUIREMENTS

Prerequisites:	CSE2DBF, (CSE100F or CSE1PE)
Co-requisites:	
Assumed Skills & Knowledge:	Programming in Java or Python and knowledge of databases
Special Study Requirements:	

Required resources:

Additional subject requirements:

Class materials:

STAFF CONTACTS

Subject Coordinator:	Associate Professor Zhen He
Email:	z.he@latrobe.edu.au
Additional contact details:	
Location:	BG 235

Tutor:	Alex Nguyen
Email:	t.nguyen9@latrobe.edu.au

ABOUT THIS SUBJECT

Companies are acquiring massive amounts of data and providing Internet-based service to millions of people. This is extremely challenging due to the large scale of data involved and the huge number of concurrent requests by users. This subject will cover the current state-of-the-art technologies for analysing huge amounts of data and responding to millions of user requests within one second. Currently the most cost-efficient way of achieving the above aim is to use large-scale cloud-based services offered by vendors such as Amazon, Google, IBM, Microsoft, etc. You will have the opportunity to learn how to use the cloud services provided by Amazon Web Services to meet the big data needs of businesses. The subject will also cover how to program the world's most popular Big Data analytics framework called Hadoop with a focus on Map Reduce, Hive and Apache Spark. This subject will also cover the following topics: cloud architectures, parallel database systems, key value stores, transaction support in the cloud, virtualization, and multi-tenant database systems.

SUBJECT INTENDED LEARNING OUTCOMES (SILOs)

Upon successful completion of this subject, you should be able to:

1. Apply your knowledge of Amazon Web Services to design a cloud-based solution for a given application scenario.
2. Implement fundamental cloud-based services using Amazon Web Service interfaces.
3. Analyse the internals of the Map Reduce Framework.
4. Solve big data analytics problems by implementing solutions using the Hadoop ecosystem.
5. Analyse the performance benefits of contrasting No SQL stores.

GRADUATE CAPABILITIES (GC)

GC	GC Elements
Communication	capstone
Inquiry and Analysis	capstone
Personal and Professional	capstone
Discipline Knowledge and Skills	CSE3BDC

LEARNING ACTIVITY SCHEDULE

Week/ Session	Date	Learning Activity	Contact hours
1	27/2	Lecture 1: Introduction to cloud computing, cloud architectures, basic services provided by Amazon Web Services	2
2	6/3	Lecture 2: Introduction to Big Data and MapReduce and AWS Elastic MapReduce	2
3	13/3	Lecture 3: Introduction to Hadoop, Hadoop Internals, Advanced MapReduce	2
4	20/3	Lecture 4: High level Hadoop Programming languages: Pig and Hive	2
5	27/3	Lecture 5: Yarn, data streams, graph analytics	2

6	3/4	Lecture 6: Introduction to Spark and Scala	2
7	17/4	Lecture 7: Spark Internals, Spark Programming	2
8	24/4	Lecture 8: Spark SQL (lecture date of 14/4 since 25/4 is university holiday)	2
9	1/5	Lecture 9: Spark Streaming and Spark Graph X	2
10	8/5	Lecture 10: Parallel Database Systems and NoSQL key value stores	2
11	15/5	Lecture 11: Different services offered by Amazon Web Services	2
12	22/5	Lecture 12: Exam revision	2
Total			24

*Timetable details are available at <http://www.latrobe.edu.au/students/timetables>. Students should also regularly check this subject's LMS site for updated information.

Details of any self-allocation activities:

SELF-DIRECTED STUDY

In addition to the learning activities specified, you are expected to allocate approximately **4 hours per week of self-directed study in this subject**. This time includes subject preparation, completing learning activities, readings, assessment preparation and other related work to enhance your participation in this subject and your learning at La Trobe.

LEARNING RESOURCES & TECHNOLOGIES

Resource Type	Title	Author and Year	Publisher
Recommended			
See slides in lecture 1 for the list of books that maybe useful.			

ASSESSMENT AND FEEDBACK SUMMARY

Week/ Session	Date due*	%	Assessment Activity	Feedback method	ILOs assessed
1.	Sunday following the week of the lab	10	Quizzes linked to labs (only for labs in week 4 to 9)		3,4
2.	19/5/2023	30	assignment	Marking sheet	4
3.	Exam Period	60	exam	Exam mark	1,2,3,4,5

Additional information about assessment & feedback

Students should keep a copy of all assignments submitted for assessment.

MANDATORY REQUIREMENTS

There are a variety of assessment hurdles or conditions for passing a subject other than the overall mark. **Mandatory Requirements** may be built into the assessment of the learning outcomes of your subject.

There are no Hurdle Requirements for this subject / The Hurdle Requirements for this subject are:

Other mandatory requirements for this subject are:

GENERAL ASSESSMENT REQUIREMENTS

SUBMITTING WRITTEN WORK WITH TURNITIN

Turnitin is a web-based text-matching software system used at La Trobe University to assist you in writing your assignments and checking for similarity with existing published work. Please remember to allow adequate time to submit your assignment to Turnitin. **It is your responsibility to have your assignment submitted by the assessment due date.** Not receiving an originality report is not an acceptable reason for requesting an assignment extension unless it is a required part of the assessment.

POLICIES, PROCEDURES AND GUIDELINES

The University has a comprehensive policy framework to which both staff and students must adhere. You should familiarise yourself with those policies, procedures and guidelines likely to affect you, especially the following:

- [Academic Progress Review Policy](#)
- Assessment Policy
- [Health and Safety](#) (OHS)
- [Privacy](#)
- [Student Academic Misconduct Policy](#)

ADJUSTMENTS TO ASSESSMENT

You may be affected by a range of adverse circumstances while you are preparing for or undertaking an assessment task. There are avenues for adjustments to your assessment depending on the circumstances you face including opportunities to apply for extensions to submission dates, Special Consideration and Alternative Assessment Schedules. For more detailed information refer to the [Assessment Procedure – Adjustments](#).

REQUEST AN EXTENSION OF TIME TO SUBMIT AN ASSIGNMENT TASK

Where you know in advance that you will not be able to submit an assessment task by the due date due to adverse circumstances that have affected you during the preparation of the task, you will need to [request an extension of time to submit](#). **This must be done at least three days prior to the due date.** Penalties normally apply if you submit an assessment after the due date. **Poor time management is not an acceptable reason for an extension.**

To apply, go to <https://www.latrobe.edu.au/students/admin/forms/request-an-extension/request>

SPECIAL CONSIDERATION

If you have experienced serious short term, adverse and unforeseen circumstances that substantially affect your ability to complete an assessment task to the best of your potential, you may be eligible to apply for **Special Consideration**. To do this or find more information, go to <http://www.latrobe.edu.au/special-consideration>

STUDENTS WITH A LEARNING ACCESS PLAN (LAP)

Students who have a Learning Access Plan must apply for any adjustments they may need via the same channels but may have access to more flexible arrangements depending on their circumstances. Please refer to the [Assessment Procedure – Adjustments](#) and your LAP.

REVIEW AND RE-MARK

For information on what to do if you wish to seek a review of an assessment outcome see Part B of the Validation and Moderation Procedure.

ACADEMIC INTEGRITY

Academic integrity means being honest in academic work and taking responsibility for learning the conventions of scholarship. Academic integrity education is integral to the learning experience at La Trobe University. The University requires its academic staff and students to observe the highest ethical standards in all aspects of academic work, and it demonstrates its commitment to these values by awarding due credit for honestly conducted scholarly work, and by penalising academic misconduct and all forms of cheating.

The penalty for submitting an assignment under your name that is the work of a third party may be severe, even leading to exclusion from the University without readmission. Refer to the **Academic Integrity - Schedule of Penalties and Actions** within the [Student Academic Misconduct Policy](#).

You should understand and be able to practice integrity in all your academic work, be familiar with the [Academic Integrity website](#) and complete the **Academic Integrity Module (AIM)** found in your LMS.

If you have any specific questions about **academic integrity** and your assessment, your Subject or Course Coordinator will be able to assist.

STUDENT FEEDBACK ON SUBJECT SURVEYS

The **Student Feedback on Subjects (SFS) Survey** is one of the quality assurance processes that occur across the University. In this survey, you can tell us about your learning experiences in this subject. We value your feedback. Your views are taken seriously and assist us to improve the learning experience for future students through the LTU Subject Monitoring process.

The surveys will be available for you to complete towards the end of the subject teaching period. Feedback from previous students who completed this subject is available in the LMS site for this subject.

For more information you may contact surveys@latrobe.edu.au.

CHARTER OF STUDENT RIGHTS AND RESPONSIBILITIES

As a La Trobe coursework student, you have rights and responsibilities which are governed by La Trobe statutes and regulations, as well as policies and procedures. La Trobe University aspires to provide an outstanding student experience which is conducive to scholarly activity and supportive of your learning goals.

The **Charter of Student Rights and Responsibilities** is a summary of your rights and responsibilities as a student at La Trobe. The Charter was developed in consultation with La Trobe students.
<https://policies.latrobe.edu.au/document/view.php?id=225>.

STUDENT COMPLAINTS

The **Student Complaints Management System (SCM)** is a formal mechanism for students to lodge concerns about any aspect of their university experience. A student complaint may be about an administrative matter, a problem with a subject or course, or the conduct of a student or staff member.

For more information about the **Student Complaint process** and how to lodge a complaint, visit the **Complaints and Feedback** page at: <https://www.latrobe.edu.au/students/support/complaints>.

GETTING HELP AND SUPPORT AT UNI

A range of services at La Trobe can assist you with your studies, health and wellbeing.

For the full range of services and facilities available for you, go to **Student Help and Support** at <https://www.latrobe.edu.au/students/support>.

STUDYING ONLINE

When you are in studying an online subject, please be sure that you can continue to access our learning support services through the Learning Hub (academic skills, English language, Maths and Science) via Zoom appointments that you can book by accessing the [Learning Hub LMS page](#) or by emailing the LearningHub@latrobe.edu.au.

You also have access to assignment feedback and online study support chat through Studiosity that can be accessed from any subject [LMS](#) page. You can also access the Library services remotely through [the library website](#).

LIBRARY

Your **Library** offers many ways to support your study. To discover more about how the Library can help, visit your **Library website** and explore the following essential resources:

- **Achieve@Uni**
<https://www.latrobe.edu.au/students/study-resources/learning/achieve> - Learn skills to help complete your assessments
- **Assessment Planner**
<http://www.latrobe.edu.au/library/assessment-thesis-support/plan-my-assessment> - Create a personal assessment schedule
- **Expert Help Guides**
<https://latrobe.libguides.com/> - Find expert discipline and specialist help for your research
- **Referencing at La Trobe University**
<http://latrobe.libguides.com/referencing/> - Understand how and why to reference
- **Academic Referencing Tool**
www.lib.latrobe.edu.au/referencing-tool - Get detailed examples of referencing styles
- **Chat to library staff**
www.latrobe.edu.au/library - Access the text chat service from the Library website
- **Contact us**
www.latrobe.edu.au/library/about/contact - Call or email your Library

ASK LA TROBE

ASK La Trobe is a service open to all La Trobe students who need guidance with administrative matters during their time at La Trobe. ASK La Trobe can provide you with help relating to enrolments and timetabling, fees and financial support, exams, results and graduations & student life and support services.

Go to **ASK La Trobe – Current Students** at <http://latrobe-current.custhelp.com/app/home> and start by looking at our **FAQs** or visit us at your campus **ASK La Trobe Help Zone**.

If you can't find what you're looking for:

- **Call** 1300 La Trobe (1300 528 762)
- **Ask a question** online at <http://latrobe-current.custhelp.com/app/ask>

- **Visit the ASK La Trobe Help Zone.** Join the queue for the Bundoora, Bendigo or city campuses using the **QLess: Virtual Queuing system**.

LEARNING AND SUPPORT PROGRAMS

There are many resources, including services, to help you with your academic studies at La Trobe. Go to the **Learning and Support Programs** page at <http://www.latrobe.edu.au/students/study-resources/learning> for further information.

HEALTH AND WELLBEING

Your health and wellbeing are an important part of being a successful student. Studying can be stressful and many factors can affect your mental and physical health, in and outside of the University.

Check out the services available to you at La Trobe to support your health and wellbeing at www.latrobe.edu.au/wellbeing.