Sesi Akademik *Academic Session*	2024/2025
Semester/Penggal *Semester/Term*	2
Kod Kursus *Course Code*	WQD7007
Tajuk Kursus *Course Title*	Pengurusan Data Besar *Big Data Management*
Bahasa Pengantar *Medium of Instruction*	Bahasa Inggeris *English*
Rujukan Utama *Main Reference*	1. Principles and Practice of Big Data: Preparing, Sharing, and Analyzing Complex Information, Jules J. Berman, 2018. 2. Big Data Systems: A 360-degree Approach, Jawwad Ahmed Shamsi and Muhammad Ali Khojaye, 2021. 3. Big Data Fundamentals: Concepts, Drivers, & Technique, Wajid Khattak and Paul Buhler, 2016. 4. MongoDB: The Definitive Guide, Powerful and Scalable Data Storage. Shannon Bradshaw and Eoin Brazil et al., 2019. 5. Big Data Governance: Modern Data Management Principles for Hadoop, NoSQL & Big Data Analytics, Peter Ghavami, 2016. 6. Modern Big Data Processing with Hadoop, V Naresh Kumar & Prashant Shindgikar, 2018.
Strategi Pembelajaran *Learning Strategies*	Segerak (F2F) Kuliah, tutorial dan makmal Segerak (NF2F) forum atas talian Pelajaran tidak segerak: Kuliah pra-rakaman, tutorial pra-rakaman, makmal pra-rakaman *Synchronous (F2F): Lecture, tutorial and lab* *Synchronous (NF2F): Online forum* *Asynchronous lessons: Pre-recorded lecture, pre-recorded tutorial, pre-recorded lab*
Masa Pembelajaran Pelajar *Student Learning Time*	Bersemuka / *Face to face* : 24 Tidak Bersemuka / *Non Face to face*: 18 Masa Persediaan Pelajar / *Student Preparation Time*: 78
Kemahiran Boleh Pindah Transferable Skills	Penyelesaian masalah dengan menggunakan kaedah - kaedah statistik, kemahiran mengintepretasi keputusan, dan kemahiran analisis/logikal; *Problem solving using stastistical technique, result evaluation skills, and analysis/logical skills.*
Pensyarah / *Lecturer* Bilik / *Room* Telefon/e-mel *Telephone/e-mail*	OCC3: Ts. Dr. Mohd Shahrul Nizam Mohd Danuri, B-3-18, 03-79676399, msnizam@um.edu.my (Course Coordinator) OCC1 & 2: Assoc. Prof. Dr. Tutut Herawan, B-3-5, 03-99672509, tutut@um.edu.my
Sesi Kuliah / *Lecture Session:* Hari/Masa / *Day/Time* Tempat / *Venue*	OCC1: Selasa, 6pm-8pm / *Tuesday, 6pm-8pm* OCC2: Sabtu, 8am-10am / *Saturday, 8am-10am* OCC3: Sabtu, 3pm-5pm / *Saturday, 3pm-5pm* Online (MS Team link will be provided in Spectrum)

Sesi Tutorial/Amali: *Tutorial/Practical Session:* Hari/Masa / *Day/Time* Tempat / *Venue*	OCC1: Selasa, 8pm-9pm / *Tuesday, 8pm-9pm* OCC2: Sabtu, 10am-11am / *Saturday, 10am-11am* OCC3: Sabtu, 5pm-6pm / *Saturday, 5pm-6pm* Online (MS Team link will be provided in Spectrum)

Perincian Pemberatan Penilaian
Detail of Assessment Weightage
	Penilaian Berterusan / *Continuous Assessment* : 60%
	   - Tugasan (Minggu 4-5) /
	      Assignment (Week 4-5) : 15%
	   - Ujian pertengahan (Minggu 8) /
	      Mid-term Test (Week 8) : 10%
	   - Ujian Makmal (Minggu 11) /
	      Lab test (Week 11) : 15%
	   - Projek (Minggu 13-14) /
	      Project (Week 13-14) : 20%
	Peperiksaan Akhir / *Final Examination* :40%
	   - Penilaian Alternatif 1 (Minggu 14)
	      Alternative assessment 1 (week 14) : 15%
	   - Penilaian Alternatif 2 (Minggu 14)
	      Alternative assessment 2 (week 14) : 25%

Jadual Pengajaran / *Teaching Schedule*

Minggu *Week*	Topik & Aktiviti *Topic & Activities*	Rujukan *References*

1	Topik/ *Topic*:
	    Pengenalan kepada kursus:
	    Data Besar dari kacamata Dunia Perniagaan & Dunia Sains
	    Introduction to the course:
	    Big Data from Business and Science perspective
	Aktiviti / *Activities*:
	    F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	    F2F: Tutorial (1 jam) / *tutorial (1 hour)*
		Bahan atas talian
		Online material

2	Topik/ *Topic*:
	    Talian paip Data Besar dengan *Hadoop*
	    Big Data Pipeline using Hadoop
	Aktiviti / *Activities*:
	    F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	    F2F: Makmal (1 jam) / *Lab (1 hour)*
		Bahan atas talian
		Online material

3	Topik/ *Topic*:
	    Konsep-konsep pangkalan data bagi data besar: Menyediakan struktur kepada data tidak berstruktur
	    Big data concepts: providing structure for unstructured data
	Aktiviti / *Activities*:
	    F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	    F2F: Tutorial (1 jam) / *tutorial (1 hour)*
		Berman (2013)
		
		Bahan atas talian
		Online material

4	Topik/ *Topic*:
	    Konsep-konsep pangkalan data bagi data besar: Pengenalpastian ontologi
	    Big data concepts: Identification and ontologies
	Aktiviti / *Activities*:
	    F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	    F2F: Makmal (1 jam) / *Lab (1 hour)*
	    Penghantaran tugasan (PDF melalui Spectrum, 10 muka surat, 15%) / *Assignment submission (PDF through Spectrum, 10 pages, 15%)*
		Berman (2013)
		
		Bahan atas talian
		Online material

5	Topik/ *Topic*:
	    Teknologi penyimpanan Data Besar: Capaian data tradisional & pengurusan pangkalan data tradisional
	    Big data technologies: Traditional database management
	Aktiviti / *Activities*:
	    NF2F: Kuliah pra-rakaman (2 jam) / *Pre-recorded Lecture (2 hours)*
	    NF2F: Tutorial pra-rakaman (1 jam) / *Pre-recorded tutorial (1 hour)*
		Berman (2013)
		
		Bahan atas talian
		Online material

6	Topik/ *Topic*:
	      Pangkalan Data Maju
	      Advance Database
	Aktiviti / *Activities*:
	      F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	      F2F: Makmal (1 jam) / *Lab (1 hour)*
		Berman (2013)
		
		Bahan atas talian
		Online material

7	Topik/ *Topic*:
	      Teknologi penyimpanan Data Besar: Pengenalan Kepada Pangkalan Data NoSQL (Bahagian 1)
	      Big data technologies: Introduction to NoSQL databases (Part 1)
	Aktiviti / *Activities*:
	      NF2F: Kuliah pra-rakaman (2 jam) / *Pre-recorded Lecture (2 hours)*
	      NF2F: Tutorial pra-rakaman (1 jam) / *Pre-recorded tutorial (1 hour)*
		Sabharwal and Edward (2014)
		
		Bahan atas talian
		Online material

5 May 2025 – 11 May2025	Cuti pertengahan Semester *Semester Break*	

8	Topik/ *Topic*:
	      Teknologi penyimpanan Data Besar: Pengenalan Kepada Pangkalan Data NoSQL (Bahagian 2)
	      Big data technologies: Introduction to NoSQL databases (Part 2)
	Aktiviti / *Activities*:
	      F2F: Kuliah (1 jam) / *Lecture (1 hours)*
	      F2F: Tutorial (1 jam) / *tutorial (1 hour)*
	      F2F: Ujian Pertengahan (1 jam, 15%) */ Mid term test (1 hour, 10%)*
		Sabharwal and Edward (2014)
		
		Bahan atas talian
		Online material

9	Topik/ *Topic*:
	      Teknologi penyimpanan Data Besar: pengaksesan data
	      Big data technologies: Data access
	Aktiviti / *Activities*:
	      F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	      F2F: Makmal (1 jam) / *Lab (1 hour)*
		Bahan atas talian
		Online material

10	Topik/ *Topic*:
	      Teknologi penyimpanan Data Besar: pengaksesan data
	      Big data technologies: Data access (Part 2)
	Aktiviti / *Activities*:
	      F2F: Kuliah (2 jam) / *Lecture (2 hours)*
	      F2F: Tutorial (1 jam) / *tutorial (1 hour)*
		Bahan atas talian
		Online material

11	Topik/ *Topic*:
	      Teknologi penyimpanan Data Besar: pengaksesan data
	      Big data technologies: Data access (Part 3)
	Aktiviti / *Activities*:
	      F2F: Kuliah (1 jam) / *Lecture (1 hour)*
		Bahan atas talian
		Online material

	F2F: Tutorial (1 jam) / *tutorial (1 hour)* F2F: Ujian Makmal (1 jam, 15%) */ Lab test (1 hour, 15%)*	
12	Topik/ *Topic*: 　Asal usul & Kepercayaan terhadap data 　*Data provenance and data trustworthiness* Aktiviti / *Activities*: 　F2F: Kuliah (2 jam) / *Lecture (2 hours)* 　F2F: Makmal (1 jam) / *lab (1 hour)*	Notes Bahan atas talian *Online material*
13	Topik/ *Topic*: 　Kajian kes 　*Case study* Aktiviti / *Activities*: 　F2F: Kuliah atas talian secara langsung (2 jam) / *Live online Lecture (2 hours)* 　F2F: Makmal atas talian secara langsung (1 jam) / *Live online lab (1 hour)*	Bahan atas talian *Online material*
14	Topik/ *Topic*: 　Ulangkaji semua topik 　*Wrap up of all topics* Aktiviti / *Activities*: 　NF2F: Forum atas talian, 2.5 jam / *online forum, 2.5 hours* 　F2F:　Laporan dan Pembentangan Projek (0.5 jam, 20%) / 　　　*Project Report and Presentation (0.5 hour, 20%)*	Bahan atas talian *Online material* Laporan projek *Project report*