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SUMMARY OF INFORMATION ON EACH COURSE

1.	Name of Course	Data Management
2.	Course Code	TDS3551
3.	Status of Course [Applies to (cohort)]	Specialization Elective for BCS (DS) and Elective for all other specializations
4.	MQF Level/Stage Note : *Certificate – MQF Level 3* *Diploma – MQF Level 4* *Bachelor – MQF Level 6* *Masters – MQF Level 7* *Doctoral – MQF Level 8*	Bachelor – MQF Level 6
5.	Version (State the date of the Senate approval – history of previous and current approval date)	Current: June 2016
6.	Pre-Requisite	TIS1101 Database Fundamentals
7.	Name(s) of academic/teaching staff	Haw Su Cheng Ho Chiung Ching Ian Tan Kim Teck
8.	Semester and Year offered	Trimester 1 or 2 (Delta)
9.	Objective of the course in the programme : To understand and describe data management techniques for large volume of structured and unstructured data to be used for information processing and data intensive applications.	
10.	Justification for including the course in the programme : Students would have been exposed to transactional database systems. This subject is the database management system for structured and unstructured data with the intention to conduct further data analysis, which is part of the data science field. Data is to be sourced, acquired, processed and stored for the purpose of decision support, information visualization and other data intensive processing needs. The data should be organized for the application of algorithms, statistics, machine learning, and for visualization purposes. This subject is therefore focused on the variety of data sources, acquisition and organization of data for further analysis work.	

11.	Course Learning Outcomes :	Domain	Level
	L01 Exhibit the knowledge of handling various types of data sources and options on data storage and management of structured and unstructured data.	Cognitive	1
	LO2 Describe the differences between various data storage and management options.	Cognitive	2

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	LO3 Demonstrate through application of various data storage and management options for a variety of data sources.	Cognitive	3

12. Mapping of Learning Outcomes to Programme Outcomes :

Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
LO1							X		
LO2							X		
LO3								X	X

13. Assessment Methods and Types :

Method and Type	Description/Details	Percentage
Lab Experiments	Marked hands-on lab work	20%
Assignment	Group assignment on a given dataset.	20%
Test	Written	20%
Final Exam	Written	40%

14. Mapping of assessment components to learning outcomes (LOs)

Assessment Components	LO1	LO2	LO3	
Lab Experiments (20%)			✓	
Assignment (20%)		✓	✓	
Test (20%)	✓	✓		
Written Exam (40%)	✓	✓		

15. Details of Course

Topics	Mode of Delivery (eg : Lecture, Tutorial, Workshop, Seminar, etc.) Indicate allocation of SLT (lecture, tutorial, lab) for each subtopic	
	Lectures (Hours)	Laboratories / Tutorials (Hours)
1) Introduction: Course introduction, Transaction systems, Recent trends	2	
2) Sources of Data: Databases, Files, Web & Crowd sources, Social Media, IoT devices, ODI Standards	4	4

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	3) Scaling and Data Storage: Scaling and Traditional DB, Column Based DB vs RDBMS, Desired Properties of Large Data Systems	4	2
	4) Large Data Storage:Storing for fact based analysis, Graph schemas (GraphML), Distributed File Systems, Scalability, MapReduce Computation	8	10
	5) Viewing and Accessing Data: Normalization and De-normalization, Infrastructure requirements for a serving server	4	4
	6) Streaming Data: Real-time views and challenges, Queueing and Streaming processing, Micro-batch stream processing	6	8

16.	Total Student Learning Time (SLT)	Face to Face / Guided Learning	Independent Learning
	Lecture	28	28
	Tutorials		
	Laboratory/Practical	28	28
	Assignment		25
	Test	1	4
	Final Exam	2	16
	Sub Total	59	101
	Total SLT	160	
17.	Credit Value	(160 / 4) = 4	
18.	Reading Materials :		
	Textbooks		
	Marz, N., Warren, J (2015), Big Data: Principles and best practices of scalable realtime data systems, Manning Publications Co.		

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	Reference Material (including 'Statutes' for Law)
	Warden, P. (2011), Data Source Handbook - A Guide to Public Data, O'Reilly Media.

Appendix (to be compiled when submitting the complete syllabus for the programme) :

1. Mission and Vision of the University and Faculty
2. Programme Objectives or Programme Educational Objectives
3. Programme Outcomes (POs)
4. Mapping of POs to the 8 MQF domain
5. Summary of the Bloom's Taxonomy's Domain Coverage in all the Los in the format below :

Subject	Learning Outcomes (please state the learning 0utcomes)	Bloom's Taxonomy Domain		
		Affective	Cognitive	Psychomotor
TDS3551	Learning Outcome 1		*1*	
	Learning Outcome 2		*2*	
	Learning Outcome 3		*3*	

6. Summary of LO to PO measurement
7. Measurement and Tabulation of result for LO achievement
8. Measurement Tabulation of result for PO achievement