Course Title	DATA MINING	Instructor	KAO CHIUN HOW
Course Class	TLSAM1A MASTER'S PROGRAM IN DATA SCIENCE, DEPARTMENT OF STATISTICS, 1A	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG4 Quality education SDG8 Decent work and economic growth		

Departmental Aim of Education

Cultivate cross-field data science analyst who integrate statistics and information science to provide effective decision-making methods and strategies in different professional fields, thereby creating the greatest application value of data.

Subject Departmental core competences

A. Data analysis ability.(ratio:30.00)

B. Information application ability.(ratio:30.00)

C. Logical reasoning ability.(ratio:20.00)

D. Ability to integrate knowledge in various fields.(ratio:20.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:20.00)

2. Information literacy. (ratio:30.00)

4. Moral integrity. (ratio:5.00)

5. Independent thinking. (ratio:20.00)

7. A spirit of teamwork and dedication. (ratio:20.00)

8. A sense of aesthetic appreciation. (ratio:5.00)

	Course Introduction	This course offers a study of the techniques of data mining (DM) and knowledge discovery in databases (KDD) for Big Data. The topic includes the concept of DM, the function of DM, the step of DM, association rules, decision tree, clustering, classification, exploratory data analysis (EDA), artificial neural networks, etc. In addition, this course also introduces MLlib which is Apache Spark's machine learning module for Big Data.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.

II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.

III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	To understand the concept and operation of Hadoop	Cognitive
2	To understand the concept and operation of Spark	Cognitive
3	To understand the techniques of data mining	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCD	1257	Lecture, Practicum	Practicum
2	ABCD	124578	Lecture, Practicum	Practicum, Report(including oral and written)
3	ABCD	124578	Lecture, Practicum	Practicum, Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	111/02/21 ~ 111/02/25	Introduction	
2	111/02/28 ~ 111/03/04	Virtual Machine	

3	111/03/07～111/03/11	Hadoop	
4	111/03/14～111/03/18	Spark	
5	111/03/21～111/03/25	MLlib	
6	111/03/28～111/04/01	Programming in Spark	
7	111/04/04～111/04/08	Programming in Spark	
8	111/04/11～111/04/15	Programming in Spark	
9	111/04/18～111/04/22	Association Rules	
10	111/04/25～111/04/29	Interim Report	
11	111/05/02～111/05/06	Decision Tree	
12	111/05/09～111/05/13	Dimensionality reduction	
13	111/05/16～111/05/20	Feature Extraction	
14	111/05/23～111/05/27	Clustering	
15	111/05/30～111/06/03	Clustering	
16	111/06/06～111/06/10	Classification and Regression	
17	111/06/13～111/06/17	Classification and Regression	
18	111/06/20～111/06/24	Final Project Presentation	

Requirement	
Teaching Facility	Computer, Projector
Textbooks and Teaching Materials	
References	Learning Spark: Lightning-Fast Data Analytics. Damji, Jules S., Wenig, Brooke, Das, Tathagata. O'Reilly
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 10.0 %　◆ Mark of Usual：10.0 %　◆ Midterm Exam： 30.0 % ◆ Final Exam： 50.0 % ◆ Other〈　〉：　　%

Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php .
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