Tamkang University Academic Year 111, 1st Semester Course Syllabus

Course Title	DATA VISUALIZATION	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		

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:40.00)

B. Information application ability.(ratio:20.00)

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:10.00)

2. Information literacy. (ratio:30.00)

3. A vision for the future. (ratio:5.00)

4. Moral integrity. (ratio:5.00)

5. Independent thinking. (ratio:20.00)

6. A cheerful attitude and healthy lifestyle. (ratio:5.00)

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

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

	Course Introduction	Data visualization as a problem-solving and knowledge discovery tool has become even more important as we enter the Big Data era. This course offers a study of data visualizations, including visual perception, visual cognition, data preprocessing, time series data visualization, spatial data visualization, network data visualization, etc. In addition to introducing the basic concepts of visualization, the course will also introduce visualization libraries and softwares such as D3.js, Data Desk, GAP, Orange3, Gephi, etc.

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	Basic theories and concepts of data visualization.	Cognitive
2	To understand different types of data visualization.	Cognitive
3	Can use some visualization softwares and libraries.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCD	12357	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written)
2	ABCD	1257	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written)
3	ABCD	12345678	Lecture	Study Assignments, Discussion(including classroom and online), Report(including oral and written)

Course Schedule			
Week	Date	Course Contents	Note
1	111/09/05~ 111/09/11	Introduction	
2	111/09/12~ 111/09/18	What: Data abstraction	
3	111/09/19~ 111/09/25	Why: Task abstraction	
4	111/09/26~ 111/10/02	Visual perception and cognition	
5	111/10/03~ 111/10/09	Data types and data transformation	
6	111/10/10~ 111/10/16	Basic statistical graphics	
7	111/10/17~ 111/10/23	Time series data visualization	
8	111/10/24~ 111/10/30	Spatial data visualization	
9	111/10/31~ 111/11/06	Interim report	
10	111/11/07~ 111/11/13	Network data visualization	
11	111/11/14~ 111/11/20	Hierarchical data visualization	
12	111/11/21~ 111/11/27	Text visualization	
13	111/11/28~ 111/12/04	High dimensional data visualization	
14	111/12/05~ 111/12/11	Interactive user interface	
15	111/12/12~ 111/12/18	Big data visualization	
16	111/12/19~ 111/12/25	Visualization softwares	
17	111/12/26~ 112/01/01	Visualization softwares	
18	112/01/02~ 112/01/08	Final Project Presentation	
Requirement			
Teaching Facility	Computer, Projector		
Textbooks and Teaching Materials			
References			

Number of Assignment(s)	2 (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 . ※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**