

## Tamkang University Academic Year 110, 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:30.00) D. Ability to integrate knowledge in various fields.(ratio:30.00)			
Subject Schoolwide essential virtues			
1. A global perspective. (ratio:20.00) 2. Information literacy. (ratio:30.00) 5. Independent thinking. (ratio:30.00) 7. A spirit of teamwork and dedication. (ratio:20.00)			
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	ABD	1257	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written)
2	ABD	1257	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written)
3	ABD	1257	Lecture	Study Assignments, Discussion(including classroom and online), Report(including oral and written)

**Course Schedule**

Week	Date	Course Contents	Note
1	110/09/22 ~ 110/09/28	Introduction	
2	110/09/29 ~ 110/10/05	What: Data abstraction	
3	110/10/06 ~ 110/10/12	Why: Task abstraction	
4	110/10/13 ~ 110/10/19	Visual perception and cognition	
5	110/10/20 ~ 110/10/26	Data types and data transformation	

6	110/10/27 ~ 110/11/02	Basic statistical graphics	
7	110/11/03 ~ 110/11/09	Time series data visualization	
8	110/11/10 ~ 110/11/16	Spatial data visualization	
9	110/11/17 ~ 110/11/23	Interim report	
10	110/11/24 ~ 110/11/30	Network data visualization	
11	110/12/01 ~ 110/12/07	Hierarchical data visualization	
12	110/12/08 ~ 110/12/14	Text visualization	
13	110/12/15 ~ 110/12/21	High dimensional data visualization	
14	110/12/22 ~ 110/12/28	Interactive user interface	
15	110/12/29 ~ 111/01/04	Big data visualization	
16	111/01/05 ~ 111/01/11	Visualization softwares	
17	111/01/12 ~ 111/01/18	Final Project Presentation	
18	111/01/19 ~ 111/01/25		
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 <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> . <b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b>	