Course Title	EXPLORATORY DATA ANALYSIS AND VISUALIZATION	Instructor	MENG-YING CHOU
Course Class	TSNXB4A DEPARTMENT OF APPLIED MATHEMATICS AND DATA SCIENCE, 4A	Details	◆ General Course ◆ Selective ◆ One Semester ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Ⅰ. To teach knowledge in mathematics.

Ⅱ. To train teaching professionals in mathematics.

Ⅲ. To develop independent and creative thinking.

Ⅳ. To establish ability to present oneself.

Ⅴ. To promote cooperative working spirit.

Ⅵ. To prepare self learning ability in multiple areas.

Subject Departmental core competences

A. To learn the fundamentals of mathematics.(ratio:10.00)

B. To develop independent and logical thinking ability.(ratio:10.00)

C. To learn basics of probability and statistic.(ratio:30.00)

D. To use the aid of computer in solving mathematical and statistical problems.(ratio:30.00)

E. To obtain the ability to collect and analyze data.(ratio:10.00)

F. To establish ability to pursue knowledge in advanced mathematics.(ratio:10.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)

2. Information literacy. (ratio:30.00)

3. A vision for the future. (ratio:10.00)

4. Moral integrity. (ratio:10.00)

5. Independent thinking. (ratio:10.00)

6. A cheerful attitude and healthy lifestyle. (ratio:10.00)

	7. A spirit of teamwork and dedication. (ratio:10.00)
	8. A sense of aesthetic appreciation. (ratio:10.00)

Course Introduction	Introduce the methods for visualizing 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 learn the methods from the package "tidyverse" for making figures with.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEF	12345678	Lecture	Testing

Course Schedule

Week	Date	Course Contents	Note
1	113/09/09 ~ 113/09/15	visualizing data with ggplot2	
2	113/09/16 ~ 113/09/22	visualizing data with ggplot2	9/17 (二) holiday; 中秋節放假
3	113/09/23 ~ 113/09/29	workflow; basick knowledge.	
4	113/09/30 ~ 113/10/06	transforming data with package dplyr	

5	113/10/07～113/10/13	transforming data with package dplyr	10/10 (四) holiday; 國慶日放假
6	113/10/14～113/10/20	workflow and scripts	
7	113/10/21～113/10/27	explorative data analysis	
8	113/10/28～113/11/03	workflow; project; Tibble format.	
9	113/11/04～113/11/10	Midterm Exam Week	
10	113/11/11～113/11/17	import data with package readr	
11	113/11/18～113/11/24	handle data with package tidyr	
12	113/11/25～113/12/01	handle data with package tidyr	
13	113/12/02～113/12/08	handle data with package dplyr	
14	113/12/09～113/12/15	handle strings with package stringr	
15	113/12/16～113/12/22	handle factors with method forcats	
16	113/12/23～113/12/29	handle the date and time data with package lubridate	
17	113/12/30～114/01/05	Final Exam Week	
18	114/01/06～114/01/12	Flex week, learning activities should be arranged.	

Key capabilities	self-directed learning
Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)
Distinctive teaching	
Course Content	Computer programming or Computer language (students have hands-on experience in related projects) Logical Thinking
Requirement	

Textbooks and Teaching Materials	Using teaching materials from other writers:Textbooks Name of teaching materials: R資料科學。 Author: Hardley Wickhan & Garrett Grolemund 著。黃銘偉譯。O'Reilly、 GOTOP 碁峯出版。
References	R資料科學。 Author: Hardley Wickhan &amp; Garrett Grolemund 著。黃銘偉譯。O'Reilly、 GOTOP 碁峯出版。
Grading Policy	◆ Attendance： 10.0 % ◆ Mark of Usual：30.0 % ◆ Midterm Exam： 30.0 % ◆ Final Exam： 30.0 % ◆ 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.**