Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

Year and Semester	2024 Spring					
Course Name	Tableau Visualization					
Course Code	MIS341					
Course Type	☐ General Education (Required) ☐ General Education (Elective) ☐ Basic Disciplinary Course ☐ Professional Course (Required) ☐ Professional Course (Elective) ☐Professional Course (Expanded) ☑ Professional Course (Advanced)					
Course Credits	4					
Course Hours	Total Class Hours	64	Lecture Hours	32	Experiment (Computer) Hours	32
Applicable object	☐ Freshman ☐ Sophomore √ Junior ☐Senior					
	☐ Business Administration (Accounting)					
	√ Information Management and Information Systems (Finance)					
Prerequisites	MIS233, MIS345					
Instructor	Jingning Li					
Contact Information	Office: C217					
	Tele: (010)83951082					
	Email: lijingning@cueb.edu.cn					
Office Hour	M: 9:55-11:30,13:30-15:05; F:9:55-11:30					
Learning Centre	T: 13:30-15:05,18:00-20:00 (online)					
Grade/Section	2021IT					
Course Time/Place	2021IT: T: 8:00-9:35; W: 9:55-11:30 (B307)					
Textbook	Qian Cheng, Yong Liu, Bo Gao, *Data Analysis and Visualization in R Language from Introduction to Mastery, Peking University Press*, ISBN 978-7-301-31480-7.					

Reference Book

1. Garrett Grolemund, *Hands-On Programming with R: Write Your Own Functions and Simulations, Posts & Telecom Press*, ISBN 978-7-115-42471-6.
2. Guoping Wang, *Microsoft Power BI Quick Get Started with Data Modeling and Visualization*, *Peking University Press*, ISBN 978-7-302-56761-5.

Course Description

R programming language is an open-source scripting language used for predictive analysis and data visualization, which can perform complex data statistical analysis and display visual graphical results. The Description of this course, is guiding students to understand the programming mode of R, and skillfully use R operators, built-in functions, basic data types such as numeric, character, logical and complex, and solve practical problems to improve students' professional quality of programming.

Student Learning Outcomes

On successful completion of this course, candidates should be able to:

Knowledge	• Understand R language • Recognize the differences between Python and R language • Understand the steps to design a program.
Capability	• Apply R language to write a modestly complex program involving multiple functions • Apply database to work with a R program • Design and test each function • Apply R language on data analysis and visualization
Mindset	• Develop the quality and morals of being objective, integrity and dedication. • Be logical, ethical, methodical, consistent and accurate • Apply critical thinking in the process of decision making

Website Source

https://cran.r-project.org/

Teaching Methods

This course includes skill demonstration, project practice, homework and classroom test. In the last two weeks, each student will be provided with personalized data to test their ability to understand and apply knowledge.

This course adopts the flipped classroom teaching mode, and provides detailed operation handouts in advance. Students are required to complete the preview and homework before class, assess and score in class, finish the project cases independently after class, and obtain the final results by means of speech competitions.

Grade Criterion

Component	Weight	Description
Final Exam	20%	A cumulative final examination will be given based on all of the contents of the class. The exam paper may be composed of computer operation questions and case analysis questions. Students should rely primarily on homework assignments to give them a sense of what they may see for material on exams.
Mid-Term Test	20%	A cumulative midterm test will be given based on all of the contents that have been taught in class. The test paper may be mainly composed of multiple-choice questions and it should be completed in class.
Homework	15%	Most of the assigned homework is taken from the Exercises in the textbook. Assignments will be collected at the clearly stated date. Late assignments will not be accepted. The graded assignments may be kept by the tutor for reference and won't be returned to students.
Quizzes	15%	There will be at least 2 quizzes during the semester. Quizzes may or may

		not be announced in advance. It may also be used as a way to check the attendance. Quizzes will test your knowledge of both concepts and the application of those concepts.
Presentation	10%	The students will be divided into several groups to prepare a presentation. Each student is required to be involved in the presentation. The topics can be selected from the textbook or lectures. Each group need to finish a PPT related to the topic which is given and hand in the related resources to the teacher before the presentation.
Participation	10%	Individuals will be asked to participate individually in a question and answer at least 5 times during the semester. The performances should be counted in their participation.
Attendance	10%	Refer to attendance policy listed below
Total	100%	

Detailed Grade Computation

	Before Midterm	After Midterm
Attendance	5%	5%
Participation	5%	5%
Homework	5%	10%
Quizzes	5%	10%
Presentation		10%
Midterm test	20%	
Final exam		20%
Total	40%	60%

Assessment of Student Performance

☞ Self-Study and Reading ability Practice

Instructor will give out the chapters or the reference books to read and use class hours to have discussion; students should be able to show a proactive attitude and ability for self-study and reading. Knowledge and oral English will be elements of homework or presentation score.

☞ Homework

Students should finish their homework by themselves. Copying from others will be treated as cheating and the homework scores will be lowered. Students should hand in all assignments on time. Late assignments will be accepted at the discretion of the instructor (i.e., when the student was ill or had an excused absence). Late assignments without reasonable proof will be reduced in score by 50%.

☞ Attendance

Because the course covers a great deal of material, attending every class session is very important for performing well.

- Being late for 15 minutes or more is considered an absence.
- Five hours or above of unexcused absences will result in the lower level of the final grade by one grade band (e.g. from C – to D +). Any excused absence must be discussed directly with the teacher.
- Absence which is more than 1/3 of the total teaching hours will cause an F (a failing grade) directly. but students are welcome to continue attending classes.

- An incomplete grade (I) will be considered in case of medical or family emergencies.

☞ ***Participation***

- Students should participate in classes actively. Half of participation grade is determined by their presentation in class. They are encouraged to ask questions relevant to the subject and express their own opinions. Every student should respect the ideas, opinions, and questions of their classmates.
- Students should also use office hours to ask questions or talk with the instructor for good communication and effective learning.
- Frequent visiting the instructor and chatting in English during office hours is highly recommended.
- Any misbehavior and non-class related activities in class will result in the lower level of the participation grade, including ringing cell phones.
- All above behaviors will be solely evaluated by the instructor for scoring.

☞ ***Textbook***

Students must bring the textbook to class.

Topic Course Outline (original)

Week	Content	Homework
1	● Syllabus ● Realize R Language environment on PC ● Chapter 1 R Language Overview - Getting Started	• Setup R language environment • Write the 1st R program
	● Chapter 1 R Language Overview - Getting Started -- Introduce R programming language o R language history o R language pros & cons o Setup R language environment o R language software	
2	● Chapter 2 Basic Programming on R Language (Part 1) -- Objects and variables -- Data types -- Data structure -- Math operators	
	● Chapter 3 Basic Programming on R Language (Part 2) -- Repetition statements -- Instance methods -- Static methods -- R language's packages	
3	● Chapter 4 Import and Export Data -- Import data -- Export data	
	● Chapter 5 Data Management - Data Operation -- Methods of data operation -- Data reshaping -- apply methods -- plyr and dplyr packages	

4	● Chapter 5 Data Management - Data Operation -- sqldf() method	
	● Chapter 6 Data Analysis - Basic Statistics -- Descriptive statistics -- Verification of counting data -- Correlation analysis	
5	● Chapter 6 Data Analysis - Basic Statistics -- t test -- Analysis of variance·	
	● Chapter 6 Data Analysis - Basic Statistics -- Nonparametric test -- Regressive analysis	
6	● Chapter 7 Data Analysis - Advanced Methods -- Discriminance analysis -- Cluster analysis	
	Qing Ming Festival	
7	**Midterm Test**	
	Midterm Test – Answer Time	
8	● Chapter 7 Data Analysis - Advanced Methods -- Principal component analysis -- Factor analysis	• Start Assignment in groups
	● Chapter 7 Data Analysis - Advanced Methods -- Assignment 1 in groups	
9	● Chapter 8 Visualization - Graphics -- Drawing system -- Single variable and bivariate plotting	
	● Chapter 8 Visualization - Graphics -- Multivariate plotting	
10	● Chapter 9 Visualization - Graphic optimization -- Add graphic elements -- Control image appearance	
	Labor Day Holiday	
11	● Chapter 9 Visualization - Graphic optimization -- Graphic color matching and layout	
	● Presentation - Assignment 1	
12	● Chapter 10 Visualization - External plugins -- ggvis plugin	
	● Chapter 10 Visualization - External plugins -- plotly plugin	
13	● Chapter 11 Visualization - Graphic Display -- Traditional graphic output -- Webpage output	
	● Chapter 12 R Language with Power BI -- Time series and its views	
14	● Chapter 12 R Language with Power BI -- Decision tree and its views	

	● Review	
15	● Presentation – Part 1	
	● Presentation – Part 2	
16	● Presentation – Part 3	
	● Q&A Time	

Note: *Some chapters or sections may leave for self-study, this is the students' duty to learn and understand, they may also be included in the quizzes or exams.A review in Chinese may be held during L.C. and O.H. in the semester.*

Teacher's Office Hour

- The instructor's office hour is shown in the front of the office door.
- Students are suggested to use the instructor's office hour and learning center to ask questions or talk with the instructor once at least per week for good communication and effective learning, which is recorded in the students' participation.
- The time can be scheduled by instructors or students, or both.

Cheating and Plagiarism

Cheating is not tolerated. Any student caught cheating on a quiz; test or exam will be given a mark of zero (0) for the particular work. At the beginning of the semester the definition of plagiarism will be carefully explained, when any thoughts or writings of another person are used, they must be clearly identified (usually one uses quotation marks) and the source notes. **If any student is caught cheating on any homework assignment, the highest score the student can earn in that course is a "C".**

Important Dates

Midterm Test	**Week 9 or 10**
Final Exam	**Week 17（Refer to the notice of the Academic Affairs Office）**

Note: *This syllabus is tentative and may be changed or modified throughout the semester. All students will be notified and a new syllabus will be given.*

Instructor: Jingning Li **Department Head: Jingning Li**