Course Description Form

1. Course Name:	
Data Analysis Methods	
2. Course Code:	
CSIS4217	
3. Semester / Year:	
Second / 2024 – 2025	
4. Description Preparation Date:	
2025/1/17	
5. Available Attendance Forms:	
Actual attendance in the form of theoretical and practical lectures	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst. Prof. Dr. Hiba Basim Alwan Email: 110154@uotechnology.edu.iq	
8. Course Objectives	
Course Objectives	Studying the concept of data, its types, and statistical and non-statistical analysis methods.
9. Teaching and Learning Strategies	
Strategy	• Providing the student with basic and secondary topics related to data analysis methods. • Translating theoretical topics and syllabus related to data analysis methods into computer-executable algorithms. • Asking the student to use algorithms related to the theoretical syllabus. • allowing the student to explain a small part of the class to his classmates to enhance his self-confidence. • Solve a small part of the homework to encourage students to complete the solution. • Giving class assignments and working in groups to solve these assignments.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	4	7 ،6 ،5 ،4 ،3 ،2 ،1	– Descriptive Statistics ○ Introduction to the course ○ Descriptive statistics ○ Probability distribution	Lectures	Ask questions and discuss them
2	4	7 ،6 ،5 ،4 ،3 ،2 ،1	– Inferential statistics ○ Inferential statistics through hypothesis tests ○ Permutation and randomization test	Lectures	Quiz
3	4	7 ،6 ،5 ،4 ،3 ،2 ،1	– Regression and ANOVA – Regression – ANOVA	Lectures	Ask questions and discuss them
4	4	7 ،6 ،5 ،4 ،3 ،2 ،1	– Supervised learning – Logistic regression	Lectures	Homework
5	4	7 ،6 ،5 ،4 ،3 ،2 ،1	○ Linear discriminant analysis Classification trees	Lectures	Ask questions and discuss them
6	4	7 ،6 ،5 ،4 ،3 ،2 ،1	○ Support vector machines	Lectures	Quiz

7	4	7 ،6 ،5 ،4 ،3 ،2 ،1	○ Ensemble methods: ○ random forest		
8	4	---	---	---	---
9	4	7 ،6 ،5 ،4 ،3 ،2 ،1	– Unsupervised learning – Clustering	Lectures	Ask questions and discuss them
10	4	7 ،6 ،5 ،4 ،3 ،2 ،1	○ Associative rule Mining challenges for big data analytics	Lectures	Quiz
11	4	---	---	---	---
12	4	7 ،6 ،5 ،4 ،3 ،2 ،1	– Prescriptive analytics ○ Creating data for analytics through designed experiments	Lectures	Quiz
13	4	7 ،6 ،5 ،4 ،3 ،2 ،1	○ Creating data for analytics through active learning ○ Creating data for analytics through reinforcement learning	Lectures	Quiz
14	4	Review	Review	Lectures	Ask questions and discuss them
15	4	Review	Review	Lectures	Ask questions and discuss them

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	

Main references (sources)	1. Peck, R., Olsen, C., & Devore, J. (2008). *Introduction to Statistics and Data Analysis* (3rd ed). USA: Thomson Higher Education. 2. Mann, P. (2009). *Introductory Statistics* (7th ed). USA: Wiley.
Recommended books and references (scientific journals, reports…)	1. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2017). *An Introduction to Statistical Learning with Applications in R*. USA: Springer. 2. Zikmund, B. & Griffin, C. *Business Research Methods* (8th ed). USA: Pearson.
Electronic References, Websites	Any approved website related to the topic of data analysis methods.