

TEMPLATE FOR COURSE SPECIFICATION

Data Mining

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

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COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Al-Nahrain University – College of Science
2. University Department/Centre	Computer Science Department
3. Course title/code	Data Mining
4. Modes of Attendance offered	Attendance is mandatory
5. Semester/Year	Second / Fourth
6. Number of hours tuition (total)	4 (2 Theoretical +2 Practical)
7. Date of production/revision of this specification	2021-2022

8. Aims of the Course

The course aims to introduce the students to the methods used in data mining and to describe its needs. The course also aims to process data, prepare the data, and understand the relationships between the inputs to make a specific decision. In addition to introducing the students to the concept of data science and its methodology followed by real examples

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals.

A1-Full understanding of the importance of data mining.

A2- The ability to understand and know the types of data processing

A3- Knowing the methods of extracting knowledge using machine learning algorithms

A4- Knowledge the methods of statistical analysis

A 5- Choosing the best method or algorithm for knowledge exploration

A6- Knowledge and ability to analyze the results to reach a decision

B. The skills goals special to the course.

B1- Using statistical methods for analysis and processing

B2 - The ability to think of the optimal solution based on the required data and outputs

Teaching and Learning Methods

Books and theoretical lectures in addition to laboratory work, discussion and asking questions that help students to analyze and conclude

Assessment methods

Monthly exams + homework

Classroom participations and discussions

Daily assessment of practical tasks in the laboratory

Determining a grade for the daily attendance

C. Affective and value goals

C1. Question: Looking for new information and raising questions

C2 - Conclusion and Deduction: Thinking about what is beyond the available information to fill the gaps

C 3 - Comparison: Note the aspects of similarities and differences between things

C4 - Classification: Putting things into groups according to common characteristics

C5- Make a decision based on the classification

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1. Analytical ability

D2 - The skill of simplifying and dividing the problem

D3- The skill of discussion and exchange of ideas

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2		Introduction to Data Mining, Data for Data Mining		
2+3	4		Data Science Methodology		
4+5	4		Getting to know your data – Chapter 2 Data, Attribute Types, Central Tendency, Measure of Dispersion, Proximity and Distance Measurements		
6	2		Decision Trees ID3		
7	Mid Exam				
8	2		k-Means Clustering		
9+10	4		Pre-Processing Techniques – Feature Selection		
11+12	2		Frequent Itemset Mining and Association Rules		
13	Mid 2 Exam				
14+15	4	Practical Examples			

11. Infrastructure	
1. Books Required reading:	Data Mining, Concepts and Techniques , Jiawei Han, Micheline Kamber and Jian Pei, Elsevier, 2012
2. Main references (sources)	

A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	Youtube -Andrew Ng

12. The development of the curriculum plan
Introducing PCA and Recommender Systems