اعتماد
NCAAA

T4

2020

Course Specifications

Course Title:	Data Mining
Course Code:	507PMAI-3
Program:	Professional Master of Artificial Intelligence
Department:	Computer Science
College:	Computer Science and information systems
Institution:	Najran University

Table of Contents

A. Course Identification

1. Credit hours:3	
2. Course type	
a. University ☐ College ☐ Department ☑ Others ☐	
b. Required ☑ Elective ☐	
3. Level/year at which this course is offered: 4th level/ 2nd year	
4. Pre-requisites for this course (if any)**:** None	
5. Co-requisites for this course (if any)**: NA**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	50	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	20
3	**Tutorial**	
4	**Others** (specify)	
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description:

This course covers the theory and practice of data mining from a variety of perspectives. This course helps students master data mining techniques for both structured data which conform to a clearly defined schema, and unstructured data which exist in the form of natural language text. Specific course topics include pattern discovery, clustering, text retrieval, text mining and analytics, and data visualization. In the practical part, students will use one of the programming languages such as Python to implement the aspects of the course and create an application in field of data mining.

2. Course Main Objective

The main objective of this course is to provide an in-depth understanding of the principles, techniques, and applications of data mining for structured and unstructured data.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	describe the key concepts of data mining and its role in extracting knowledge from structured and unstructured data	K1
1.2	explain different data mining algorithms and their practical implementations	K1, K2
1.3		
1...		
2	**Skills**	
2.1	apply data mining techniques to a wide range of problems, including structured data and unstructured data.	S1, S4
2.2	Evaluate the applicability of different data mining techniques	S2
2.3	develop appropriate data mining solution for extract knowledge from massive data sets	S2, S4
2.4		
2.5		
3	**Competences:**	
3.1	Communicate clearly and effectively using the data mining technical language	C2
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Introduction	3
2	Data Visualization	3
3	Data Visualization for non-numerical data	3
4	Link Analysis	3
5	Search Engines and retrieval systems	3
6	Probabilistic retrieval models and statistical language models	3
7	Natural Language Processing	3
8	Topic analysis	3
9	Data Clustering	3
10	Pattern discovery	3
11	Mining Data Streams	3
12	Dimensionality Reduction	3
13	Community Detection in Graphs	3

14	Recommender Systems	3
15	Learning through Experimentation	8
Total		50

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	describe the key concepts of data mining and its role in extracting knowledge from structured and unstructured data	• Giving Lectures in PPT, recalling the lecture through asking Questions. Clarifying doubts on Lecture. • Discussions of real life problems, among teacher, students	Quiz Theory Assignments Midterm Examination Final Examination
1.2 …	explain different data mining algorithms and their practical implementations		
2.0	**Skills**		
2.1	apply data mining techniques to a wide range of problems, including structured data and unstructured data.	• Giving Lectures in PPT, recalling the lecture through asking Questions. Clarifying doubts on Lecture. • Conducting a discussion of real life problems, among teacher, students • Cooperative learning among the students. • Encourage students to browse different journals, seminars or websites at their leisure time to have a better understanding about the course	Quiz Lab Assignments Midterm Examination Final Examination,
2.2	Evaluate the applicability of different data mining techniques		Quiz, Theory Assignments Final Examination
2.3	develop appropriate data mining solution for extract knowledge from massive data sets		Midterm Examination Min-project Final Examination
2.4			
2.5			
3.0	**Competences**		
3.1	Communicate clearly and effectively using the data mining technical language.		Mini-Project presentation
3.2 …			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz1	3rd week	5%
2	Midterm	6th week	20%
3	Mini-Project	9th week	15%
4	Lab Assignments	4th ,7th, 10th week	15%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
5	Quiz2	10th week	5%
7	Final Exam	12th or 13th week	40%
8			

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Weekly office hours

- Pre-booked Appointments

- Additional office hours prior exams

- Weekly academic advising hours

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Introduction to Data Mining, Pang-Ning, Michael Steinbatch et al, 2020
Essential References Materials	• Mining Massive Datasets, Jure Leskovec, Anand Rajaraman, Jeff Ullman, Third Edition.
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Room B-59 Laboratory B-113L
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show, PCs.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	• Printer is important in the lab to print reports and some snapshots. • Projector and PC for the lab instructor is required

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Online course survey	Students	Indirect
course learning outcomes achievement survey	Students	Indirect
achievement of course learning outcomes	instructor	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Computer Science Departmental Council
Reference No.	14440203-0185-00002
Date	1st Sep, 2022