Daffodil International University
Department of Computer Science and Engineering (CSE)
OBE Course Outline

Course Code:	**CSE450**		
Course Title:	**Data Mining**		
Program:	B.Sc. in CSE		
Faculty:	Faculty of Science and Information Technology (FSIT)		
Semester:	**SPRING**	**Year:**	**2020**
Credit:	3	**Contact Hour:**	3hrs / week
Course Level:	Level 4 Term 3	**Prerequisite:**	CSE214
Course Category:	Core		
Instructor Name:	MUR		
Designation:	Lecturer		
Email:	Mushfiqur.cse@diu.edu.bd		
Office Address:	Daffodil International University		

Class Hours:	**Section**	**Class Day**	**Class Hours**	**Classroom**

Google Classroom Code:	**Spring 2020 - 4qgf5vt (PC-B)**

1. Course Rationale

An introduction to data mining; Data preparation, model building, and data mining techniques such as clustering, decisions trees and neural networks; Induction of predictive models from data: classification, regression, and probability estimation; Application case studies; Data-mining software tools review and comparison.

1.1. Course Objectives

- To appreciate the necessity of data mining in everyday life

- To apply the concept of data mining in solving problems

- To demonstrate applications of data mining using tools

- To apply knowledge of data mining in project wo

1.2. Course Outcomes (CO's)

CO1	Able to grasp the basic Data Mining Principles
CO2	Able to identify appropriate data mining algorithms to solve real world problems
CO3	Able to compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining
CO4	Able to apply data mining knowledge in problem solving

1.3. Program Outcomes (PO's)

Program Outcomes are reported in Appendix-I.

1.4. CO-PO Mapping [attainment level used for COs from 1(weak)-3(strong) correlation]

PO's \ CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											
CO2	3	2	3									
CO3	3	2		2								
CO4	3	3	3		3							2

1.5. CO Assessment Scheme

Assessment Task	CO's				Mark (Total=100)
	CO1	CO2	CO3	CO4	
Attendance	--	--	--	--	7
Class Test (CT1, CT2, CT3)	--	--	--	--	15
Assignment	--	--	--	--	5
Presentation	--	--	--	--	8
Midterm Examination	12	13	--	--	25
Semester Final Examination	10	10	10	10	40
				Total Mark	100

2. Strategies and approaches to learning

2.1. Teaching and Learning Activities (TLA)

TLA1	Open discussion using multimedia or whiteboard.
TLA2	Active discussion in class on solving problems.
TLA3	Group discussion and presentation regarding related problems and assigned task.
TLA4	Evaluation of class performances to reach each student in a class for every topic.

3. Course Schedule and Structure

3.1. Textbook

Data Mining: Concept and Techniques by *Jaiwei Han and Jain Pei*

3.2. Reference Books/Materials
- Google classroom repository
- Other online resources

3.3. Course Plan/Lesson Plan

Week	Lesson.	Topic	Teaching and Learning Activities (TLAi)	Textbook& Video Reference	Related CO's
1	Les. 1	**Slide** [Motivation, Course Information, Skills and Application Areas] **White Board**: [Discussion based on agenda, thought points, what is expected from student, research ideas and projects]	TLA1, TLA2	**Media:** Explore Google classroom [repository] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Target chapters for Mid and Final.. discuss importance of reading book	NONE
	Les. 2	**Slide** [Using Python for Data Mining] **White Board:** [Discussion based on agenda, Data mining vs DBMS, What is not data mining, etc] **Action Item: Team Project Allocation in Course**	TLA1, TLA2	**Media:** Explore Google classroom [course projects] **Book**: Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 1 (1.1 – 1.7), page 1-29, Exercise page 34	CO1
2	Les. 3	**Slide** [Getting to know Data] **White Board:** [Discussion based on agenda, data and types , handling data etc]	TLA1, TLA2	**Media:** [NONE] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 2 (2.1 – 2.4), page 40-77, Exercise page 79	CO1

Week	Lesson.	Topic	Teaching and Learning Activities (TLAi)	Textbook& Video Reference	Related CO's
	Les. 4	**Slide** [Python for Data Processing] **White Board**: [Review on data and chapter 2] **Action Item: Research paper discussion**	TLA1, TLA2	**Media:** [Youtube video for data proceing using Python] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 2 (2.1 – 2.4), page 40-77, Exercise page 79	CO1, CO2
3	(Class Test – 1, Assignment – 1)				
	Les. 5	**Slide** [NONE] **White Board**: [NONE] **Action Item: Presentation I on Project**	TLA1, TLA2, TLA3	**Media:** [NONE] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 2 (2.1 – 2.4), page 40-77, Exercise page 79	CO1, CO2, CO4
	Les. 6	**Slide** [NONE] **White Board:** [Review on data mining and data] **Action Item: Class Test 1**	TLA3, TLA4	**Media:** [NONE] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Review Chapter 1 and Chapter 2	CO1, CO3
4	Les. 7	**Slide** [Data Preprocessing using Python] **White Board:** [Discussion on data preprocessing, example and exercise]	TLA1, TLA2	**Media:** [Youtube video on data preprocessing] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 3 (3.1 to 3.5) page 83	CO1, CO2
	Les. 8	**Slide** [Data Preprocessing using Python] **White Board**: [Discussion on data preprocessing, example and exercise]	TLA1, TLA2	**Media:** [Youtube video on data preprocessing] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 3 (3.1 to 3.5)	CO1, CO2

Week	Lesson.	Topic	Teaching and Learning Activities (TLAi)	Textbook& Video Reference	Related CO's
				page 83 with exercise solving at page 121	
5		(Class Test – 2)			
	Les. 9	**Slide** [Data Preprocessing using Python] **White Board:** [Discussion on data preprocessing, example and exercise]	TLA1, TLA2	**Media:** [Youtube video on data preprocessing] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 3 (3.1 to 3.5) page 83 with exercise solving at page 121	CO1, CO2
	Les. 10	**Slide** [NONE] **White Board:** [NONE] **Action Item: Presentation-II on project**	TLA1, TLA2, TLA3	**Media**: [NONE] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 3 (3.1 to 3.5) page 83 with exercise solving at page 121	CO1, CO2, CO3
6	Les. 11	**Slide** [NONE] **White Board:** [Review discussion on data preprocessing] **Action Item: Class Test 2**	TLA3	**Media:** [NONE] **Book**: Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Review Chapter 3 (3.1 to 3.5) page 83	CO1, CO2
	Les. 12	**Slide** [Slide on Mining Frequent patterns] **White Board**: [Frequent pattern mining and discussion, example and exercise]	TLA1	**Media:** [Youtube video for Frequent Pattern Mining] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 6 (6.1 an 6.2) page 243	CO1, CO2
(MID–TERM EXAM)					

Week	Lesson.	Topic	Teaching and Learning Activities (TLAi)	Textbook& Video Reference	Related CO's
7	Les. 13	**Slide** [Slide on Mining Frequent patterns] **White Board:** [Frequent pattern mining and discussion, example and exercise]	TLA1, TLA2	**Media:** [Youtube video for Frequent Pattern Mining] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 6 (6.1 to 6.3) page 243 with exercise on page 273	CO2, CO3
	Les. 14	**Slide** [Slide on Advanced pattern mining] **White Board:** [discussion on advanced pattern mining] **Action Item: <u>Research paper discussion</u>**	TLA1, TLA2	**Media:** [NONE] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 7 (7.2 to 7.4) page 279	CO2, CO3
8	Les. 15	**Slide** [Slide on Classification] **White Board:** [discussion on classification, example and exercise]	TLA1, TLA2	**Media:** [Youtube video on Classification] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 8 (8.1 and 8.2) page 327	CO1, CO2
	Les. 16	**Slide** [Slide on Classification] **White Board:** [discussion on classification, example and exercise]	TLA1, TLA2	**Media:** [Youtube video on Classification] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 8 (8.1 and 8.2) page 327	CO1, CO2
9	Les. 17	**Slide** [NONE] **White Board:** [Review discussions] **Action Item: <u>Class Test 3</u>**	TLA1, TLA2	**Media**: [NONE] **Book**: Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 8 (8.1 to 8.4)	CO1, CO2, CO3

Week	Lesson.	Topic	Teaching and Learning Activities (TLAi)	Textbook& Video Reference	Related CO's
				page 327	
	Les. 18	**Slide** [NONE] **White Board**: [NONE] **Action Item: <u>Presentation III on Project</u>**	TLA1, TLA3	**Media:** [NONE] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 8 (8.1 to 8.4) page 327	CO1, CO2, CO4
10		(Class Test-3, Assignment – 2)			
	Les. 19	**Slide** [Slide on Classification Application] **White Board:** [discussion on classification, example and exercise]	TLA3	**Media:** [Youtube video on Classification] **Book:** Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 8 (8.5 and 8.6) page 327 with exercise on page 386	CO1, CO2
	Les. 20	**Slide** [Slide on Advanced Classification Method] **White Board**: [discussion on advanced classification, example and exercise]	TLA1, TLA2	**Media**: [NONE] **Book**: Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 9 (9.3 and 9.4) page 393	CO1, CO2
11	Les. 21	**Slide** [Slide on Cluster Analysis] **White Board:** [discussion on clustering, example and exercise]	TLA1, TLA2	**Media**: [Youtube video on cluster analysis] **Book**: Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 10 (10.1 and 10.2) page 443	CO1, CO2
	Les. 22	**Slide** [Slide on Cluster Analysis] **White Board:** [discussion on clustering, example and exercise]	TLA1, TLA2	**Media**: [Youtube video on cluster analysis] **Book**: Data Mining: Concept and Techniques by Jaiwei Han and Jain Pei … … Chapter 10 (10.1 and 10.2) page 443	CO1, CO2
(FINAL EXAM)					

4. Assessment Methods

4.1. Grading System

Numerical Grade	Letter Grade	Grade Point
80-100	A+	4.00
75-79	A	3.75
70-74	A-	3.50
65-69	B+	3.25
60-64	B	3.00
55-59	B-	2.75
50-54	C+	2.50
45-49	C	2.25
40-44	D	2.00
Less than 40	F	0.00

5. Additional Support for Students

- Student Portal:
  http://studentportal.diu.edu.bd/
- Academic Guidelines
  https://daffodilvarsity.edu.bd/article/academic-guidelines
- Rules and Regulations of DIU
  https://daffodilvarsity.edu.bd/article/rules-and-regulation
- Career Development Center:
  https://cdc.daffodilvarsity.edu.bd/
- For general queries:
  http://daffodilvarsity.edu.bd/

Appendix-1: Program outcomes

POs	Category	Program Outcomes
PO1	**Engineering Knowledge**	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem Analysis**	Identify, formulate, research the literature and analyze complex engineering problems and reach substantiated conclusions using first principles of mathematics, the natural sciences and the engineering sciences.
PO3	**Design/Development of Solutions**	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety as well as cultural, societal and environmental concerns.
PO4	**Investigations**	Conduct investigations of complex problems, considering design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO5	**Modern tool usage**	Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society**	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO7	**Environment and sustainability**	Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics**	Apply ethical principles and commit to professional ethics, responsibilities and the norms of the engineering practice.
PO9	**Individual work and teamwork**	Function effectively as an individual and as a member or leader of diverse teams as well as in multidisciplinary settings.
PO10	**Communication**	Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.
PO11	**Project management and finance**	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member or a leader of a team to manage projects in multidisciplinary environments.
PO12	**Life Long Learning**	Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological change.