DATA WAREHOUSING & MINING

REGULAR & PEER MENTORING

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
K L UNIVERSITY

DATA WARE HOUSING & MINING (Regular):
LTPS: 2-0-2-0

CO	Description	BTL
CO1	An ability to Illustrate Data Warehouse models, architecture and uses.	2
CO2	An ability to understand data mining, data preprocessing data reduction and prediction.	2
CO3	An ability to construct data classification models, rule mining and analyzing the performance.	3
CO4	An ability to apply clustering algorithms for solving real time problems.	3
CO5	An ability to demonstrate mining algorithms using suitable tools and programming languages	5

Syllabus:

Introduction to Data Warehouse and mining, Data Discretization and Concept hierarchy generation, Overview of ETL and OLAP OLTP integration – comparison of OLAP with OLTP systems, ROLAP, MOLAP and DOLAP, Data Cube Computation methods, Advanced SQL support for OLAP, multi-dimensional modelling, Attribute-oriented Induction, Data Warehouse architecture and implementation - Parallel execution, Materialized views.

KDD, Data Objects and Attribute Types, Basic Statistical Descriptions of Data, Data Pre processing-Data Cleaning methods, Descriptive Data Summarization, Data Reduction, Corelation, Regression Analysis.

Data Mining Techniques: Classification by decision tree induction, Bayesian Classification, Classification Back-propagation, Basic concepts of Association Rule Mining, Frequent Item set mining, Mining various kinds of association rules, Rule-based Classification, Associative Classification, SVM, Performance Analysis.

Supervised and Unsupervised learrning, Clustering methods, Partitioning-Based Clustering Methods:Hierarchical Clustering Methods; Density Based and Grid-Based Clustering Methods.

Text Books:

1. Han J & Kamber M, “Data Mining: Concepts and Techniques”, Third Edition, Elsevier, 2011.
2. Pang-Ning Tan, Michael Steinback, Vipin Kumar, “Introduction to Data Mining”, Pearson Education, 2008

Reference Books :

1. M.Humphires, M.Hawkins, M.Dy,“Data Warehousing: Architecture and Implementation”, Pearson Education, 2009.
2. Anahory, Murray, “Data Warehousing in the Real World”, Pearson Education, 2008.
3. Kargupta, Joshi,etc., “Data Mining: Next Generation Challenges and Future Directions”, Prentice Hall of India Pvt Ltd, 2007.

MOOC Courses:

Guided Regular

Sl No	Souce	Course Name	Link
1	coursera	Data Mining Specialization	https://www.coursera.org/specializations/data-mining?#courses
2	LinkedIn	Data Science Foundations: Data Mining in Python	https://www.linkedin.com/learning/data-science-foundations-data-mining-in-python/python-for-data-mining?u=89447330
3	Futurelearn	Data Mining with Weka	https://www.futurelearn.com/courses/data-mining-with-weka
4	FutureLearn	More Data Mining with Weka	https://www.futurelearn.com/courses/more-data-mining-with-weka

Self-Learning Regular

Sl No	Souce	Course Name	Link
1	coursera	Data Mining Specialization	https://www.coursera.org/specializations/data-mining?#courses
2	LinkedIn	Data Science Foundations: Data Mining	https://www.linkedin.com/learning/data-science-foundations-data-mining/welcome?u=89447330
3	LinkedIn	Data Science Foundations: Data Mining in Python	https://www.linkedin.com/learning/data-science-foundations-data-mining-in-python/python-for-data-mining?u=89447330
4	Futurelearn	Data Mining with Weka	https://www.futurelearn.com/courses/data-mining-with-weka
5	FutureLearn	More Data Mining with Weka	https://www.futurelearn.com/courses/more-data-mining-with-weka

DATA WARE HOUSING & MINING (Advanced):

LTPS: 3-0-4-0

CO	Description	BTL
CO1	An ability to Illustrate Data Warehouse models, architecture and uses.	2
CO2	An ability to understand data mining, data preprocessing data reduction and prediction.	2
CO3	An ability to construct data classification models, rule mining, analyzing the performance and Predictive analytics.	3
CO4	An ability to apply clustering algorithms for solving real time problems and study of mining applications like web, text, spatial etc.	3
CO5	An ability to demonstrate mining algorithms using suitable tools and programming languages	5

Syllabus:

Introduction to Data Warehouse and mining, Data Discretization and Concept hierarchy generation, Overview of ETL and OLAP OLTP integration – comparison of OLAP with OLTP systems, ROLAP, MOLAP and DOLAP, Data Cube Computation methods, Advanced SQL support for OLAP, multi-dimensional modelling, Attribute-oriented Induction, Data Warehouse architecture and implementation - Parallel execution, Materialized views.

KDD, Data Objects and Attribute Types, Basic Statistical Descriptions of Data, Data Pre processing-Data Cleaning methods, Descriptive Data Summarization, Data Reduction, corelation, regression analysis.

Data Mining Techniques: Classification by decision tree induction, Bayesian Classification, Classification Back-propagation, Basic concepts of Association Rule Mining, Frequent Item set mining, Mining various kinds of association rules, Rule-based Classification, Associative Classification, SVM, Performance Analysis.

Predictive Analytics and Data Mining: K-Nearest Neighbor, K-Nearest Neighbor Classifier, Selecting the Best K, Bayes' Rule, The Naïve Bayes classifier.

Supervised and Unsupervised learrning, Clustering methods, Partitioning-Based Clustering Methods:Hierarchical Clustering Methods; Density Based and Grid-Based Clustering Methods

Mining Object, Spatial, Multimedia, Text and Web Data:

Text Books:

1. Han J & Kamber M, “Data Mining: Concepts and Techniques”, Third Edition, Elsevier, 2011.
2. Pang-Ning Tan, Michael Steinback, Vipin Kumar, “Introduction to Data Mining”, Pearson Education, 2008

Reference Books :

1. M.Humphires, M.Hawkins, M.Dy,“Data Warehousing: Architecture and Implementation”, Pearson Education, 2009.
2. Anahory, Murray, “Data Warehousing in the Real World”, Pearson Education, 2008.
3. Kargupta, Joshi,etc., “Data Mining: Next Generation Challenges and Future Directions”, Prentice Hall of India Pvt Ltd, 2007.

MOOC Courses:

Sl No	Souce	Course Name	Link
1	coursera	Data Mining Specialization	https://www.coursera.org/specializations/data-mining?#courses
2	coursera	Predictive Analytics and Data Mining	https://www.coursera.org/learn/predictive-analytics-data-mining#syllabus
3	LinkedIn	Data Science Foundations: Data Mining	https://www.linkedin.com/learning/data-science-foundations-data-mining/welcome?u=89447330
4	LinkedIn	The Essential Elements of Predictive Analytics and Data Mining	https://www.linkedin.com/learning/the-essential-elements-of-predictive-analytics-and-data-mining/welcome?u=89447330
5	LinkedIn	Data Science Foundations: Data Mining in Python	https://www.linkedin.com/learning/data-science-foundations-data-mining-in-python/python-for-data-mining?u=89447330
6	Futurelearn	Data Mining with Weka	https://www.futurelearn.com/courses/data-mining-with-weka
7	FutureLearn	More Data Mining with Weka	https://www.futurelearn.com/courses/more-data-mining-with-weka

Faculty SRP Preparation Courses:

Sl No	Souce	Course Name	Link
1	coursera	Data Mining Specialization	https://www.coursera.org/specializations/data-mining?#courses
2	coursera	Predictive Analytics and Data Mining	https://www.coursera.org/learn/predictive-analytics-data-mining#syllabus
3	LinkedIn	The Essential Elements of Predictive Analytics and Data Mining	https://www.linkedin.com/learning/the-essential-elements-of-predictive-analytics-and-data-mining/welcome?u=89447330
4	LinkedIn	Data Science Foundations: Data Mining in Python	https://www.linkedin.com/learning/data-science-foundations-data-mining-in-python/python-for-data-mining?u=89447330
5	Futurelearn	Data Mining with Weka	https://www.futurelearn.com/courses/data-mining-with-weka
6	FutureLearn	More Data Mining with Weka	https://www.futurelearn.com/courses/more-data-mining-with-weka

SRP Preparation Time Chart

Category	Regd	Data Mining Specialization C1-1: Data Visualization C1-2: Text Retrieval and Search Engines C1-3: Text Mining and Analytics C1-4: Pattern Discovery in Data Mining C1-5: Cluster Analysis in Data Mining C1-6: Data Mining Project						Predictive Analytics and Data Mining	Data Science Foundations: Data Mining	The Essential Elements of Predictive Analytics and Data Mining	Data Science Foundations: Data Mining in Python	Data Mining with Weka	More Data Mining with Weka
	All Cs	C1-1	C1-2	C1-3	C1-4	C1-5	C1-6	C2	C4	C5	C6	C7	C8
St-Guided Regular	1stWk	7th Wk	7th Wk	8th Wk	3rd Wk	4th Wk	9th Wk				6th Wk	5th Wk	5th Wk
St-Self Learning	1stWk	7th Wk	7th Wk	8th Wk	3rd Wk	4th Wk	9th Wk		3rd Wk		6th Wk	5th Wk	5th Wk
St-Peer	1st Wk	7th Wk	7th Wk	8th Wk	3rd Wk	4th Wk	10 Wk	9th Wk	3rd Wk	9th Wk	6th Wk	5th Wk	5th Wk
Faculty	1st Day (SRP-01)	6th Wk	6th Wk	5th Wk	4th Wk	4th Wk	4th Wk	2nd Wk	1st Wk	3rd Wk	3rd Wk	1st Wk	1st Wk