# CPIS-342 Syllabus

## Catalog Description

**CPIS-342** Data Mining and Warehousing
**Credit:** 3 ( Theory: 3, Lab: 1, Practical: 1)
**Prerequisite:** CPIS-240
**Classification:** Department Required

The objective of this course is to study the basic concepts of data warehousing and the required skills to develop and use them. It emphasizes on employing data warehousing to support the decision-making process. It also covers the architectures of data warehousing and the infrastructural settings to develop them. It explains various ways of extracting, analyzing data to support the decision-making process. This course is intended to develop the student's ability to extract information from data and identify patterns and trends by designing a data warehouse and by applying data mining methods for classification, clustering, and association analysis.

**Class Schedule**

Lab/Tutorial 90 minutes 1 times/week

Meet 50 minutes 3 times/week or 80 minutes 2 times/week

## Textbook

George M. Marakas, "Data Mining:Concepts and Techinques" 3 edition (2003)

**ISBN-13** 9780123814791 **ISBN-10** 9380931913

## Grade Distribution

| Week | Assessment | Grade % |
|---|---|---|
| 3 | Quiz 1 | 3 |
| 3 | Graded Lab Work 1 | 1 |
| 5 | Graded Lab Work 2 | 1 |
| 6 | Exam 1 | 10 |
| 9 | Quiz 2 | 3 |
| 11 | Quiz 3 | 3 |
| 11 | Graded Lab Work 3 | 1 |
| 12 | Graded Lab Work 4 | 1 |
| 12 | Exam 2 | 10 |
| 13 | Quiz 4 | 3 |
| 13 | Lab Exam | 10 |
| 14 | Group Project | 20 |
| 14 | Quiz 5 | 3 |
| 15 | Graded Lab Work 5 | 1 |
| 16 | Comprehensive Final Exam | 30 |

## Last Articulated

April 25, 2018

## Relationship to Student Outcomes

| a | b | c | d | e | f | g | h | i | j |
|---|---|---|---|---|---|---|---|---|---|
| x | | x | | | | | | x | |

## Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. **Design and implement data mining solution to a given problem (c)**
2. Use numerical and graphical methods to summarize data (i)
3. **Identify and remove missing values, noise and outliers in presented data (i)**
4. Identify relationships in presented data using correlation analysis (a)
5. **Use classification and regression algorithms to build prediction models (i)**
6. Validate a prediction model using split and cross validation methods (i)
7. Compare and contrast classifiers using various evaluation measures (a)
8. Differentiate between hierarchical and partitioning clustering methods (a)
9. **Use clustering algorithms to form clusters in given data (i)**
10. **Use frequent pattern mining methods to extract association rules from given data (i)**
11. Characterize and rank the association rules using support, confidence and lift (a)
12. Differentiate between data warehouse and operational database (a)
13. Design a data warehouse schema using fact and dimension tables (c)
14. Describe the OLAP operations to analyze data in a data cube (a)

## Coordinator(s)

Dr. Rabeeh Abbasi, Assistant Professor

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## Topics Coverage Durations

| Topics | Weeks |
|---|---|
| Introduction to Data Mining and Warehousing | 1 |
| Data | 2 |
| Data Preprocessing | 2 |
| Classification and Prediction | 4 |
| Cluster Analysis | 2 |
| Mining Frequent Patterns, Associations and Correlations | 2 |
| Data Warehousing and OLAP Technology | 2 |