The University of Texas at Tyler
Bachelor of Science in Computer Science

Syllabus

Course Number:	COSC 4352
Course Title:	Data Mining
Course Description: The course deals with knowledge discovery from databases (KDD). Topics covered in the course include data warehouse, model fitting, classification, prediction, clustering, market basket analysis, extracting knowledge from data models, and data visualization techniques.	
Pre-requisites:	COSC 2336, COSC 2315
Credits:	3 hours lecture
Text(s): Han Jiawei and Kamber Micheline (2006). *Data Mining Concepts and Techniques.* Morgan Kaufman, San Francisco, CA.	
Languages Used: (if applicable)	Not Applicable

Topics	Time:
1. Introduction to KDD process	3
2. Data warehouse and OLAP technology	6
3. Pre-processing techniques	6
4. Data mining systems	3
5. Classification	6
6. Clustering	6
7. Fuzzy Inference Systems	3
8. Neural Networks	3
9. Knowledge discovery	6

Additional Materials:	

Evaluation Method: (only items in dark print apply)	
1. **Examination/Quiz**	2. **Homework**
3. Paper/Report	4. Computer Program
5. Project	6. Presentation
7. **Class Participation**	8. Peer Review

Course Objectives[1]: By the end of this course students are expected to:
1. Describe stages in the KDD process [1, 7].
2. Describe three-tier data warehouse architecture [1, 7].
3. Describe with the help of a diagram functions of various blocks of fuzzy inference system [1, 7].
4. Apply regression model to a set of data points [1, 2, 7].

5. Design and implement the induction tree classifier [1, 2].
6. Analyze single layer neural network models [1, 2].
7. Design and develop software to implement Apply clustering algorithms [1, 2].
8. Generate association rules from item data sets [1, 2, 7].
9. Compare and contrast neural networks and fuzzy inference systems [1]
10. Evaluate classification results with the help of a confusion matrix [1, 7].
11. Generate classification rules from sample data points [1, 2, 7].
[1] *Numbers in bracket refer to method(s) used to evaluate the course objective.*

Relationship to Program Outcomes: (only items in dark print apply)[2] **This course supports the following Computer Science Program Outcomes, which state that our students at the time of graduation are expected to:**
1. Posses knowledge of the fundamentals of mathematics, science, and technology [1,2]
2. Be able to use modern computational tools and techniques in the practice of computer science
3. Be able to develop logically sound and efficient algorithms [4, 5, 7, 8].
4. Be prepared to implement algorithms in multiple programming languages, on multiple hardware platforms, and in multiple operating system environments.
5. Be able to perform analysis, design, implementation, testing, and maintenance of computer-based systems, stressing software engineering principles [5, 7, 10, 11].
6. Be prepared to seek continuing professional development, graduate studies, or professional certifications related to computer science.
7. Demonstrate effective written, visual and oral communication skills.
8. Posses an educational background to understand the global context in which computer science is practiced, including: a. Knowledge of contemporary issues related to computer science; b. The impact of computers on society; c. The role of ethics in the practice of computer science.
9. Be able to contribute effectively as members of a project development team.
10. Recognize the need to pursue continued learning throughout their professional careers.
[2]Numbers in brackets refer to course objective(s) that address the Program Outcome.

Prepared By: Arun Kulkarni	Date: October 8 , 2004
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