Current Courses

Current Courses (Offered in the last year)
Please note that the course content changes every year in accordance with the latest techniques, algorithmic paradigms and applications in the topic areas.

1. CSC-493/579: Data Mining and Knowledge Discovery (Avg. Enrollment: 30; Spring-03, Fall-04, Fall-05, Fall-06, Fall-07, Fall-08, Fall-09, Fall-10, Fall-11, Winter-12, Fall-13). Latest syllabus is available [here].

2. CSC-580: Advanced Data Mining, Fusion and Applications (Avg. Enrollment: 18; Fall-03, Winter-05, Winter-06, Spring-07; Spring-08; Spring-09, Spring-10, Spring-11, Spring-12, Spring-13). Latest syllabus is available [here].

3. CSC-557: Introduction to Data Analytics (Avg. enrollment: 30; Spring-13). Latest syllabus is available [here].

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Special Offering

*Advanced Data Mining, Fusion and Applications* - CSC 580 (Spring-2011)

CSC-580 (Graduate Elective), CSC-490c (Undergraduate Elective)

This course offering is to enable students of any discipline to learn about the principles of Data
Mining and Data Fusion and its applications in Cyber Security and other data-rich areas. The course covers the fundamentals of High Dimensional data clustering • Types of cluster analysis and applications in anomaly detection • Meta data detection • Correlation Analysis • Data conflict detection • Resolution of semantic heterogeneity towards smooth distributed data integration • Implementation of Support Vector Machines for multi-class classification and its application in intrusion detection • Application of spatio-temporal data structures for range queries for data mining applications • Intricacies of Image feature extraction for Content-Based Image Retrieval and Annotation of Images • Advanced solutions in indexing and querying large time-series.

Topics included:

The fundamentals in Privacy Preserving Data Mining (PPDM) in cyber-security, including privacy preserving techniques, multi-party computing (MPC), cryptography The performance evaluations of PPDM algorithm
Privacy preservation decision trees
Privacy preservation Bayesian network
Privacy preservation K-nearest neighbor
Privacy preserving k-clustering.
The emphasis on applications from fields of Cyber Security
Tele-communications
Retail Industry
Financial Data Analysis
Scientific Applications
PPDM in intrusion detection and network monitoring
Emerging challenges of PPDM applications in cyber-security
For further information contact Dr. Dua.

Data Mining and Knowledge Discovery (Effective Winter-2009)

CSC-493 (Undergraduate Elective) cross-listed with CSC-579 (Graduate Elective)

Topics included:

Understand the architecture of a typical data mining system.
Understand various descriptive data summarization foundational techniques to measure tendency, dispersion and graphical inspection of high-dimensional data.

Differentiate between levels, dimensions, correlation or associate and dense or sparse association rules.

Define an association rule problem from variety of business and scientific problems.

Understand differences between antimonotonic, monotonic, convertible, and inconvertible constraint-based rule mining.

Understand and resolve issues with Classification and Prediction.

Understand decision-tree based classification.

Understand and employ Bayesian classification and rule-based classification.

Understand the intricacies of Associative Classification.

Understand and employ classification accuracy and error measures.
SACS Institutional Syllabi Information for the Computer Science Program is available [here](#).