

# ISC4933/5935 Data Mining

## Fall Semester 2014

**Day / Time:** MWF 09:05 AM – 09:55 AM

**Location:** DSL 0499

**Instructor:** Dr. Anke Meyer-Baese

**Email:** ameyerbaese@fsu.edu

**Office:** Room 476 DSL Dirac Science Library

**Office Hours:** 10:00 – 12:00 PM M or by appointment

**Phone:** 644-3494

**Textbook:** **Introduction to Data Mining**, by P. N. Tan et al., Pearson, 2006.

**Course Web Page:** A course web page is being developed and will have a hyperlink on <http://campus.fsu.edu/>. An announcement will be made in class when the web page is completed.

**Catalog Description:** Basic data mining concepts – data representation and visualization. Classification techniques: decision trees, rule-based classifier, nearest-neighbor classifier, Bayesian classifier, artificial neural networks, support vector machines. Cluster analysis: density-based cluster, graph-based cluster. Basic learning mechanisms: supervised and unsupervised. Temporal and spatial mining: prediction, time-series, regression. Performance evaluation: ROC curves, confusion matrix. Applications of data mining: anomaly detection, remote sensing, bioinformatics and medical imaging. Programming exercises will be assigned.

**Prerequisites:** ISC3222 or ISC3313 or ISC4304 or COP 3330 or consent of instructor.

**Course Objectives:** At the end of the year, the student will be able to:

1. Understand basic data mining tasks, principles, techniques and metrics.
2. Learning about data mining techniques.
3. Understand and apply the concept of classification and clustering.
4. Building basic terminology.
5. Describing and demonstrating the knowledge of spatial and temporal mining.
6. Learning how to apply evaluation techniques.
7. Identifying applications of data mining: anomaly detection, bioinformatics and medical imaging. Having an overview of the developing areas: web mining, text mining and ethical aspects of data mining.

## **Class Policies:**

Exams/Tests:

- Test dates announced at least 1 week in advance.
- Quizzes will be given without notice.
- No make-ups will be granted unless **prior** approval has been obtained from the instructor.

Homework:

- Assignments are due at the *BEGINNING* of class on the due date.
- Late assignments will be assessed a *50% penalty* for the *first 24 hours*.
- Assignments will *NOT BE ACCEPTED MORE THAN 24 HOURS LATE*.

University Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy: The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and...[to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>).

Americans with Disability Act: Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class. This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the: Student Disability Resource Center 874 Traditions Way 108 Student Services Building Florida State University Tallahassee, FL 32306-4167 (850) 644-9566 (voice) (850) 644-8504 (TDD) [sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu) <http://www.disabilitycenter.fsu.edu>

Syllabus Change Policy: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

Free Tutoring from FSU: On-campus tutoring and writing assistance is available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list of on-campus tutoring options at <http://ace.fsu.edu/tutoring> or contact [tutor@fsu.edu](mailto:tutor@fsu.edu). High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to encourage the

highest level of individual academic success while upholding personal academic integrity.

**Grading Policy: ISC4933/5935 :**

Mid-term test	40%
Term research project	40%
In-class assignments	10%
Homework Assignments	10%

Questions, problems and errors involving the grading of any assignment or test must be brought to the attention of the instructor **within 1 week** of the graded work's return to the *class*. A student's absence from class does not extend the time limit. After 1 week the grade is final and will not be reviewed at the student's request.

**Tentative Class Schedule** (subject to modification; provided only for planning purposes)

<b>Week</b>	<b>Topic</b>
1	Introduction to data mining tasks.
2	Data mining metrics.
3	Data mining techniques.
4	Classification, introductory concepts.
5	Classification, decision trees and alternative techniques.
6	Clustering, basic techniques.
7	Review and Midterm Test
8	Clustering, supervised and unsupervised techniques.
9	Clustering, graph-based algorithms.
10	Spatial and temporal mining.
11	Application of data mining: anomaly detection.
12	Application of data mining: bioinformatics
13	Applications of data mining: remote sensing

**Note:** Dates and material covered are subject to modification at any time.