Spring 2013 - Syllabus  
EENG 4010.005- 5940.001 Environmental Data Analysis

Class meetings: Tuesday-Thursday 10:00-11:20 AM at Discovery Park B242

Description
Foundations and practice of data analysis and statistics, including time series, spatial analysis, and multivariate techniques. Fundamental course on applications to engineering, geography, and environmental science. Credit hours: 3 hrs.

Objectives
This course aims to help students:
- Understand the theoretical background underlying statistical and data analysis techniques
- Understand the assumptions and validity conditions for statistical tests and data analysis techniques
- Employ software for statistics and data analysis
- Understand methods and techniques to work with spatial data and time series

Prerequisites
- For EENG4010: Consent of the instructor
- For EENG5940: Graduate standing

Instructor
Miguel F. Acevedo, Regents Professor Electrical Engineering Department, Office B-260, Phone 940-891-6701, Email Miguel.Acevedo@unt.edu

Office hours
M-W 10-11:30 AM and by appointment.

Format
- Lectures with computer based labs
- Assignments: weekly homework.
- Online resources: Blackboard learn https://learn.unt.edu

Grade
- EENG4010: 70% graded assignments and 30% two exams.
- EENG5900: 55% graded assignments, 30% two exams and 15% for a research paper.
- Attendance is required and will be monitored.

Schedules of exams
- Exam 1 (Midterm) TBD
- Designated final day: Exam 2 (Final) and paper due for 5940.

Textbooks
Class Evaluation by Students
The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT and is available for your input at the end of the semester.

Topics
- Probability
- Random variables, distributions, moments, statistics
- Exploratory analysis and inferential statistics
- Simple Regression
- Random processes and time-series analysis
- Analysis of spatial point patterns.
- Matrices and linear algebra
- Multiple regression, discriminant analysis
- Dependent random processes and autoregressive time series
- Spatial analysis using geostatistics and spatial regression
- Multivariate analysis based on eigenvector methods: principal components analysis, factor analysis, correspondence analysis, canonical correlation, constrained correspondence analysis cluster analysis, multidimensional scaling
Policies

**Grades:** All grades for the course will be final. No extra credit assignments or work will be considered after the final grade has been recorded.

**Accommodations:** The EE Department in cooperation with the Office of Disability Accommodation complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request before the 12th class day.

**Academic Dishonesty:** Students caught cheating, plagiarizing, or any other academic dishonesty will be subject to penalty according to the new Policy on Students Standards on Academic Integrity. See full policy at [http://www.unt.edu/policy/UNT_Policy/volume3/18_1_16.pdf](http://www.unt.edu/policy/UNT_Policy/volume3/18_1_16.pdf)

According to this policy the categories of academic dishonesty are:

A. **Cheating.** The use of unauthorized assistance in an academic exercise, including but not limited to:
   a. use of any unauthorized assistance to take exams, tests, quizzes or other assessments;
   b. dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems or carrying out other assignments;
   c. acquisition, without permission, of tests, notes or other academic materials belonging to a faculty or staff member of the University;
   d. dual submission of a paper or project, or re-submission of a paper or project to a different class without express permission from the instructor;
   e. any other act designed to give a student an unfair advantage on an academic assignment.

B. **Plagiarism.** Use of another’s thoughts or words without proper attribution in any academic exercise, regardless of the student’s intent, including but not limited to:
   a. the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgement or citation.
   b. the knowing or negligent unacknowledged use of materials prepared by another person or by an agency engaged in selling term papers or other academic materials.

C. ** Forgery.** Altering a score, grade or official academic university record or forging the signature of an instructor or other student.

D. **Fabrication.** Falsifying or inventing any information, data or research as part of an academic exercise.

E. **Facilitating Academic Dishonesty.** Helping or assisting another in the commission of academic dishonesty.

F. **Sabotage.** Acting to prevent others from completing their work or willfully disrupting the academic work of others.