I. COURSE INFORMATION

Instructor: Dr. Pablo Tarazaga  
Phone: 825-3187  
E-mail: pablo.tarazaga@tamucc.edu  
Office: CI 316  
Office Hours: MW 9:00 to 11:300

Lectures: MW 2:00-3:15 BH-223

II. COURSE DESCRIPTION

This course will deal with methods and software to analyze multivariate data. First the course goes on a quick review of basic statistic and a short introduction to essential linear algebra concepts. After looking to representation techniques for multivariate data, basic tools for multivariate analysis are presented, among them are: regression in several variables, measuring and testing multivariable distances, principal components, factor analysis, cluster analysis and multidimensional scaling. Students will do analysis of data sets using the R package.
III. PREREQUISITES

MATH 2413

IV. TEXT AND OTHER SUPPLIES REQUIRED

Required books:


Reference book:


V. STUDENTS LEARNING OUTCOMES.

- Students will learn to perform statistical analysis of multivariate data, using the following techniques:
  
  - Representation Analysis and test of data sets.
  - Multiple regression, correlation and tests.
  - Testing multivariate distances.
  - Principal components analysis.
  - Factor analysis.
  - Cluster analysis.
Multidimensional scaling.

Student will learn how to use a computational environment to do statistical analysis of multivariate data using the “R” package. Among the skills they will obtain are:

- Data manipulation.
- Data representation.
- Testing hypothesis.
- Analysis and interpretation of the results.

VI. INSTRUCTIONAL METHODS AND ACTIVITIES.

The class uses lecture format encouraging student participation and discussion. Problems and data sets for analysis will be giving to students with every chapter or unit that we cover.

VII. EVALUATIONS AND GRADE ASSIGNMENTS

All the work done in the class will be part of your final grade. The table below shows the weight of each of the items considered to determine your grade. Assignments will be given with each unit that we cover during the course.

<table>
<thead>
<tr>
<th>Items</th>
<th>Weight</th>
</tr>
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<tbody>
<tr>
<td>Assignments</td>
<td>50%</td>
</tr>
<tr>
<td>Midterm</td>
<td>25%</td>
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<tr>
<td>Final exam</td>
<td>25%</td>
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Your final grade will be determined using the following scale:

A: 90%-100%    B: 80%-89%    C: 70%-79%    D: 60%-69%    F: 0%-59
### VIII. TENTATIVE COURSE SCHE

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Topics</th>
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<tbody>
<tr>
<td>8/20-9/3</td>
<td>Review of basic statistics: Descriptive statistics, graphs, distribution functions, confidence intervals, testing hypothesis. Correlation coefficient and regression lines.</td>
</tr>
<tr>
<td>9/10</td>
<td>The R package, download the package and manuals. First examples.</td>
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<tr>
<td>9/24-10/1</td>
<td>Regression, multiple linear regression. Comparison of means of two samples: single case and multivariate case. Applications.</td>
</tr>
<tr>
<td>10/8-10/15</td>
<td>Measuring and testing multivariate distances. Classes of distances. Distances between observations, populations and samples. Applications and tests.</td>
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<tr>
<td>Dec 10</td>
<td>Final Exam (1:45-4:15)</td>
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IX. CLASS POLICIES

- Attendance: It will not be part of your grade, it is required. Exceptions are sickness and emergencies.
- I do expect that you come to each class ready to learn and to participate. Also you have to be prepared to do any required work. You are expected to work on the material of the classes, the assignments and to complement any concept or tool that you need for the class.
- Assignments and projects have to be turn in on time. If not, penalties will apply.
- Grades: After you receive your grades, you have a couple of days to discuss them with me if you do not agree.
- If at any point during the course you are considering to drop the class, talk to me before you do it. I am here to help you in your learning experience and to help you to succeed in your college career.
- PLEASE TURN YOUR CELLULAR PHONES OFF. DO NOT DISTURB THE CLASS WITH THEM.

**Academic Honesty:** University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, forgery or plagiarism.

**Grade Appeal Process:** As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is
encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules.

**Dropping a Class:** I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. November 5, 2010 is the last day to drop a class with an automatic grade of “W” this term.

**Disabilities Accommodations:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.