SYLLABUS : Spring, 2010
STATISTICS 689 : Missing Data in Longitudinal Studies

INSTRUCTOR: Dr. Mohsen Pourahmadi
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TEXT:

1. (Required) Missing Data in Longitudinal Studies: Strategies for Bayesian Modeling and Sensitivity Analysis. M.J. Daniels and J.W. Hogan (2008),Chapman &Hall/CRC Press.

2. (Recommended) Data Analysis Using Regression and Multilevel/Hierarchical Models. A. Gelman and J. Hill (2008), Cambridge Press.

3. (Recommended) Mixed Effects Models for Complex Data. Lang Wu (2009), Chapman & Hall /CRC Press.

4. (Recommended) Antedependence Models for Longitudinal Data. D. Zimmerman and V. Nunez-Anton, Chapman & Hall/CRC Press.

5. (Recommended) Longitudinal Data Analysis. G. Fitzmaurice, M. Davidian, G. Verbeke, G. Molenberghs (2008) CRC Press.

PREREQUISITE: Equivalent of STAT 636 and STAT 612 OR Approval of the Instructor.

FOCUS OF THE COURSE: STAT 689 is intended for a mixed of motivated graduate students in statistics and other fields who need a solid introduction to the theory and methods of longitudinal (repeated measures, panel,) data analysis with a focus on handling the difficult and prevalent problem of missing data. After reviewing some background material on regression models or generalized linear models(GLMs) with correlated response, and introducing the basic principles of longitudinal studies and methods of analysis, we discuss applications to biomedical sciences and social sciences or areas of interest to students in the course. Modeling dependence and covariance matrix of longitudinal data and their impacts on handling missing data will be discussed. Early in the semester, students will be divided into smaller groups who are interested in similar application areas, they will be assigned a project and relevant research papers and datasets to study, analyze and present at various times in the course. In addition to the textbook, we shall rely extensively on research papers published in the last decade or so, most of which are reviewed and summarized in

the recommended texts.

GRADING POLICY:

1. Only one midterm exam worth 100 points will be given in class. There is no final examination.

2. Homework will be assigned regularly and posted on DoStat (Reference and Registration codes are : DS-297 and LDA), it will contribute 50 points to the course. The quality of writing and logical presentation of the arguments leading to a result, not just the correct answer, will contribute greatly to the grade for this part of the course. Attendance and classroom participation are encouraged and will be rewarded, they are integral parts of the learning process .

3. Project in the course will involve a significant amount of reading the relevant literature in the student's area of interest, computational effort, discussion and presentation in the class. This is worth 150 points. The final project report should be organized and typed following the format of a research article in statistics. The quality of writing and presentation in class will contribute greatly to the grade for this part of the course.

4. The final course grade will be based on the standard scale where a total of 90 to 100 percent will be an A, 80 to 89 percent will be a B, etc.

5. ACADEMIC INTEGRITY STATEMENT: "An Aggie does not lie, cheat, or steal or tolerate those who do." The Aggie Honor Council Rules and Procedures are available at http://www.tamu.edu/aggiehonor.

6. STATEMENT ON PLAGIARISM: As commonly defined, plagiarism consists of passing off as one's own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."

7. STATEMENT ON DISABILITIES: 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 for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Office of Disability Services in Room B118 of Cain Hall. The phone number is 845-1637.