### Feature & Considerations

**Instructor & TA Information (for each Faculty and TA)**

Course Director:

Instructors:

Office hours for instructors and TAs will be announced the first day of class and posted on Blackboard.

**Course Description**

PH1690 Foundations of Biostatistics

- Fall 2010
- 4 credit hours
- Format: __ ITV ___ Online ___ Face-to Face ___ Hybrid

This course is designed for students with little previous coursework in mathematics or statistics. Topics include research ethics, study design, data description, elements of probability, distribution of random variables, application of the binomial and normal distribution, estimation and confidence intervals, hypothesis testing, contingency tables, regression, and analysis of variance. Additional topics include introduction to statistical computing and data management, distribution free statistical methods, demographic measures, and life tables.

**Textbook and Materials**


Additional handouts will be posted on the course website.

**Course Learning Objectives**

The learning objective of this course is to understand the foundation of statistical theory and methods for summarization and elementary analysis of public health related data. Specifically:

1) to recognize different types of observations and to summarize data using a variety of approaches, including table and summary statistics, and to present data using various types of graphics;

2) to be able to formulate statistical problems in the terminology of probability, understand random variables, Binomial, Poisson and Normal distributions, expectation and variance of both discrete and continuous random variables;

3) to understand central limit theorem and its application to the distribution of the mean, confidence interval for one sample and
computation of sample size;  
4) to be able to formulate statistical hypotheses and basic hypothesis testing, and be able to conduct one-sided and two sided tests about the mean;  
5) to be able to conduct chi-square tests for independence for 2x2 tables;  
6) to understand one-way analysis of variance;  
7) to know how to do simple linear regression and analysis of correlation, recognize the situations leading to the other types of regressions, including multiple regression and logistic regression;  
8) to understand life tables and their applications; and  
9) to be able to carry out most statistical analyses discussed in the course with Stata.

**Learning Activities**

**On-line material and discussion board.** Course material will be posted in Blackboard, which includes slides, homework assignment and additional reading material. The website address is [http://bb.uth.tmc.edu/index3.html](http://bb.uth.tmc.edu/index3.html).

**Students must familiarize themselves with Blackboard.** Each class member upon enrollment will also have Blackboard Class access. See the Blackboard orientation on the Class site or through Blackboard itself. We will use the Discussion Board of Blackboard as the primary channel for questions and answers.

The Class Blackboard site has detailed instructions and background material for all aspects of the class. It is a valuable resource and it will serve your best interests to familiarize yourself with the site and its folders.

Homework assignment must be written in MS Word and submitted electronically through Blackboard on time.

Late submissions will result in point deduction (10% of the points for a given homework for each day delayed and late exam submission is not acceptable). Students can discuss homework with their peers but they must write their reports independently; midterm and final exams are expected to be completed on time. **Plagiarism will lead to serious consequence.** Students must use assigned SPH email. Personal email addresses or non-UT servers are not acceptable as required by our IT support. This is for your safety and convenience as well as for the School’s computer security.

**Student Assessment And Grading**

Evaluation is based on a combination of the timely completion of homework, homework grade and grades for the midterm and final examinations. Final Grades are by Letter grade (as a required core
The following table lists approximate weights for the components to the final score and exact weights will be given for different sessions at the beginning of the course:

<table>
<thead>
<tr>
<th>Learning Component</th>
<th>Weight (%)</th>
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<tbody>
<tr>
<td><strong>Participation and homework</strong></td>
<td></td>
</tr>
<tr>
<td>Participation in discussion (which may vary across different sessions)</td>
<td>10</td>
</tr>
<tr>
<td>Homework grade</td>
<td>30</td>
</tr>
<tr>
<td><strong>Exams</strong></td>
<td></td>
</tr>
<tr>
<td>Midterm Exam grade</td>
<td>25</td>
</tr>
<tr>
<td>Final Exam grade</td>
<td>35</td>
</tr>
</tbody>
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Grades and score correspondence: A:90-100, B:80-89, C:70-79 and F: below 70.

An elementary working knowledge of basic algebra and mathematical manipulations is necessary. Ability to work with a statistical software package will need to be developed during class. Students may elect to use a selection of software packages, but the class will only support Stata 11.0, which can be accessed remotely or run locally if a license is purchased (see additional document for detail). An optional Stata 11.0 lab will be provided during the course.

All students are recommended to spend some times before the course starts to refresh his/her mathematics and computer skills. The contents in the following links are appropriate for the preparation.

**Mathematics**

1) Dr. Ford’s Review of Mathematics, which gives a gentle introduction of basic mathematics and various notations that are often encountered during the course
   [http://www.sph.uth.tmc.edu/courses/Biometry/ford/documents/MATHREV.pdf](http://www.sph.uth.tmc.edu/courses/Biometry/ford/documents/MATHREV.pdf)

2) Math tutorial which gives a well structured introduction to basic mathematics filled with many exercises

**Introduction to Statistical software STATA**

1) Dr. Dunn’s introduction to STATA, which should be helpful for
students without much prior knowledge in statistics and computer
http://www.sph.uth.tmc.edu/courses/Biometry/KDunn/PH1726_spr07/Handouts/StataIntro.pdf

2) A movie clip on STATA which is a good companion of Dr. Dunn’s introduction
http://www.sph.uth.tmc.edu/courses/biometry/kdunn/stata/frame.html

3) UCLA website, which has many good material about STATA
http://www.ats.ucla.edu/stat/stata/

4) Princeton website, which is an excellent tutorial on STATA
http://data.princeton.edu/stata/default.html

5) Official website for STATA, which is the ultimate reference site including how to purchase the software
http://www.stata.com/links/resources1.html

Policies and Procedures

- Cheating and/or plagiarism of any kind will not be tolerated and will result in grade penalties.
- Students are encouraged to share ideas and discuss freely any aspect of the course material. However, students are expected to do their own work and adhere to rules of acceptable student conduct, in particular, to write their home assignments independently. Scholastic dishonesty includes, but is not limited to, falsifying research, cheating on assignments or examinations, or plagiarizing any aspect of work that is submitted as your own. Plagiarism extends beyond copying text verbatim from the writing or works of another individual – note that paraphrased text that is too similar to the original passage, even though it is correctly cited, may be viewed as plagiarized text. Refer to the website developed by the University of Texas at Austin for examples of plagiarism:
  http://www.utexas.edu/lbj/students/writing/plagiarism.pdf.

Information about withdrawal dates, incomplete dates, incomplete grades, academic dishonesty and other policies are available in the SPH catalog at http://www.sph.uth.tmc.edu/uploadedFiles/catalog.pdf. An incomplete grade not made up by the end of the next semester would become an F.
| Course Calendar | Course calendar will be provided on Blackboard. |