Title & Number(s):  Biostatistics  22S:101:BBB; STAT:3510:0BBB

Department: Statistics and Actuarial Science  241 SH
DEO: Luke Tierney, 241 SH, statistics@uiowa.edu, 335-0712

Instructor: George Woodworth
George-woodworth@uiowa.edu
Office: 210 SH
Hours: 10:30 – 12:00 AM, M-F, or by appointment.

Course Description: This is an introduction to Bayesian Statistical Reasoning, with emphasis on applications in Biomedical Research. Topics covered are: probability, theory of statistical inference, inference on rates and proportions (crosstabulation, odds ratios, Mantel-Haenszel, logistic regression, adjusted odds ratios, credible/confidence intervals, Bayes Empirical Bayes meta-analysis), statistical inference on normalizable quantities (standard errors, t-distributions, transformation to normality, multiple linear regression, adjusted means, credible/confidence intervals), statistical inference on time-to-event observations (Kaplan-Meier survival functions, proportional hazards regression), introduction to decision analysis (utility, QALYs, backward induction), and introductions to statistical packages (R, SAS, WinBUGS).

Goals and Objectives: Upon completion of the course students are expected to be able to execute basic statistical analyses using R or SAS and WinBUGS and to be able to interpret statistical reports in the biomedical literature that employ methods covered in this course.

Textbooks and other Course Materials: The textbook is “Biostatistics, A Bayesian Introduction,” 2nd ed by George Woodworth. All reading materials, including the textbook, will be available online via links on the ICON site (some links are embedded in online documents). Such materials will be posted no later than 8 days before the first lecture on that topic. Students may opt to buy a hardcopy of the first edition of the textbook from the University Bookstore. Students will need a clicker for this course, and a scientific calculator, actual or emulated by some other device such as a cellphone. The minimum capabilities are square root, ln, e^x, and non-integer powers x^y. Students will need access to a web-browser and some method of viewing .pdf files.

Grading procedures. Grades are based on the following components

1. knowledge (80.0%)
   a. midterms and final exam (70.0%)
   b. clicker quiz score (5%)
   c. homework score (5%)
2. substantive engagement in discussion sections (15%)
   a. asking substantive questions
   b. responding when the TA asks you a question
   c. quizzes, worksheets, attendance requirements, at the TA’s discretion
3. adult work habits (5%)
   a. attend lectures (checked at 12:35 & between 1:15 and 1:20) (2.5%)
   b. submit a complete homework attempt before the final 48 hours (2.5%)

**Letter grades** are based on the weighted average of the above components using the indicated weights. The weighted average is rounded to an integer (n.5 rounds up to n+1) and the letter grade is determined from the rounded value:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93-100</td>
<td>A</td>
</tr>
<tr>
<td>89-92</td>
<td>A-</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
</tr>
<tr>
<td>83-86</td>
<td>B</td>
</tr>
<tr>
<td>80-82</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>73-76</td>
<td>C</td>
</tr>
<tr>
<td>70-72</td>
<td>C-</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

A+ will require 1) an average of 98.0 or higher and 2) a self-designed creative project. Consult the instructor for advice on developing your project. Extra credit homework opportunities are offered. Any extra credit score can be used, at the student’s request, to replace a homework score.

**Exam Dates:** Midterm 1: 2/25/2013, Midterm 2: 4/8/2013 in the regular classroom at the regular meeting time. Students with three or more exams (including this one) on either of these dates may take the exam at an alternate time to be announced. The Final Exam date has not yet been announced by the Registrar.

**Resources:** Peer tutoring: [Tutor Iowa](#). TA office hours, Instructor office hours. Exam review sessions will be offered during the weekends before each exam (including the Final).
CLAS Teaching Policies & Resources

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at http://clas.uiowa.edu/students/handbook.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

Accommodations for Disabilities

A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Honesty

All CLAS students have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

CLAS Final Examination Policies

The final examination schedule for each class is announced around the fifth week of the semester by the Registrar. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the dates and times of each final exam, the complete schedule will be published on the Registrar's web site.
Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.