STAT 205: Elementary Statistics for the Biological and Life Sciences
Fall 2010

Section 1  Tuesday/Thursday  3:30 – 4:45 in Williams-Brice 127

Instructor Information:
Course instructor: Tim Hanson
Office: LeConte 219C, Office phone: 777-3859, E-mail: hansont@stat.sc.edu
Class website: www.stat.sc.edu/~hansont/stat205/stat205.html
Tim’s office hours: Tuesday/Thursday 11-12, Wednesday 10-12
Course T.A. is Jordan Smith; office hours Tuesday 9-11, Wednesday 4-6, and Thursday 9-11 in LeConte 215A

Description: Elementary Statistics for the Biological and Life Sciences. (3) (Prereq: MATH 111 or higher, or consent of department) An introduction to fundamental statistical methods with applications in the biological and life sciences. Topics include descriptive statistics, probability, inference, and an overview of contingency tables, linear regression, and ANOVA.

Purpose of the Course: To give students in biology, ecology, public health, pharmacy, nursing and other life sciences a non-calculus based introduction to the application of modern statistical methods including descriptive and inferential statistics. To show students that statistics is an important research tool within the biological and life sciences.


Attendance: All students are expected to attend all classes. It is assumed that any information given out during class has been delivered to all students.

What is Expected of You:
Read the sections of the text to be covered prior to the class session.
Attend class regularly.
Arrive on time.
Bring lecture notes with you.
Attempt to do all assigned homework.
Ask questions when you don’t understand!

Learning Outcomes: By the end of the term, successful students should be able to do the following:

- Recognize basic principles of design of experiments
- Understand, apply, and communicate statistical reasoning from data using basic statistical terms, descriptive statistics, and charts and graphs when appropriate.
- Understand and apply principles of probability, including the normal curve and the binomial distribution in the context of the life sciences, sensitivity, specificity, and positive predictive value
- Analyze quantitative and qualitative data using standard statistical software to apply the appropriate statistical method
- Understand aspects of hypothesis testing, including decision error rates, statistical power, statistical significance, and the relationship between confidence intervals and hypothesis tests
- Understand and effectively communicate results of statistical inference in the context of the life sciences, including standard inference for means and proportions, relative risk and odds ratios, linear and logistic regression, and non-parametric procedures

Calculator and Computer: Each student will need a scientific calculator and access to the internet to complete homework assignments and print off notes and readings. Computers are located throughout the campus. I’ll teach certain statistical methods on the TI-83 (or higher – 84 is preferred) calculator. You will be allowed to use
this calculator during exams and many students find this helpful, since having one of these calculators can cut down significantly on hand calculations. If you do not have one of these calculators or cannot afford one, the department has (a few) loaner TI-84 calculators.

**Computer Facilities:** A computer account through the College of Arts and Sciences using the MATH/STAT (MS) domain will be set up for you. Use your Blackboard username and your social Security Number to log in the first time – then you can change your password to anything you want. Two MS labs are available in LeConte, rooms 124 and 303A. Check these locations for hours. Through this account, you will be issued a reasonable quota of paper for printing at no charge. To check your paper balance, hover the mouse over the “$” in toolbar located at the bottom right of the screen – a balance of $150.00 means you have 150 sheets of paper left in your free quota. Be careful to follow the printer instructions taped on the desk to the left of your computer monitor!

**Class e-mails:** Please make sure your e-mail address is current in the Blackboard system. I will be sending all class e-mails through blackboard.

**Cell Phones:** Keep them out of sight and turned off. Absolutely no cell phones during exams.

**Homework:** A total of 9 homework assignments covering the concepts taught in the class will be posted in the “Homework” section of the class website. Homework will not be graded. I would suggest trying the homework yourself before discussing with others. Attempting to do problems yourself will reveal if you really know the material. I will take questions on homework at the beginning of class. If you would like feedback on your work, you may submit it to me. I will tell you what is correct or incorrect and give you feedback. Please only submit work that needs feedback – do not submit answers copied from the solution key or someone else’s solution. Please submit this work in a neat, clearly labeled format.

**Quizzes:** There will be 11 quizzes given throughout the semester. Dates are listed on the List of Topics sheet. There will be no make-up quizzes. Each quiz will consist of one question from recently assigned homework. Each quiz is worth 10 points and your lowest quiz score will be extra credit contributed to your quiz grade (with a max of 100 points for your overall quiz grade).

**Exams:** Two in-class exams will be given. Dates are listed on the List of Topics sheet. All work on exams must be independent. Make-up exams will be considered only in extreme circumstances and a doctor’s note will be required. Contact me as soon as possible if you think your situation merits a makeup.

**Final Exam:** The final exam for this course will be comprehensive and will be administered Wednesday, December 8 at 9:00am in Williams-Brice 127.

All work on the final exam must be independent.

**Possible Grade Contributions:**

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<th>Course Grade</th>
<th>First Exam 100 pts.</th>
<th>Second Exam 100 pts.</th>
<th>Quiz Average 100 pts.</th>
<th>Final Exam 100 pts.</th>
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**Honor Code:** See the Carolinian Creed in the Carolina Community: Student Handbook & Policy Guide.