

**STAT 205: Elementary Statistics for the Biological and Life Sciences**  
Section 002, Spring 2015

**Class Meetings:** TR, 8:30 – 9:45 AM, WMBB Nursing 127

**Instructor Information:**

Peijie Hou (PJ)  
Office: LeConte 209E  
E-mail: [houp@email.sc.edu](mailto:houp@email.sc.edu)

**Instructional Assistant:**

**Office Hours:** Tuesday/Wednesday/Thursday 10:00-11:30 AM or by appointment.

**Description:** (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.

**What is Expected of You:**

*Read* the sections of the text to be covered prior to the class session.

*Attend* class regularly and on time.

*Bring* lecture notes with you.

*Attempt* to do all assigned homework.

*Ask* questions when you don't understand!

**Learning outcomes:**

After completion of the course, the successful student will be able to (a) understand and interpret common graphical displays and summary statistics from data, (b) apply the rules of probability to solve basic problems, (c) understand aspects of one and two sample problems, including confidence intervals, hypothesis testing, sample size calculation, power, and checking assumptions, (d) understand basic ideas underlying one-way analysis of variance, (e) understand aspects of the simple linear regression model: least squares estimation, the normal-errors model, confidence interval and hypothesis tests for slope, (f) understand the logistic regression model and its use for analyzing Bernoulli outcomes with a continuous predictor, (g) understand aspects of 2×2 contingency tables: relative risk, odds ratio, difference in proportions, case-control studies, independence, sensitivity, specificity, and prevalence, predictive values positive and negative, Simpson's paradox and the Cochran-Mantel-Haenszel test, (h) have a basic understanding of related ideas including receiver operator characteristic (ROC) curves, disease rates, incidence versus prevalence, and survival curves, and (i) be able to carry out common statistical methods in the computing package R.

**Textbook:** Samuels, M. L., and Witmer, J. A. & Schaffner, A. (2010). *Statistics for the Life Sciences*, 4th Ed.

**Course Management:** Course notes, homework assignment can be found in the course website: [http://www.stat.sc.edu/~houp/Stat205/stat205\\_spring2015.html](http://www.stat.sc.edu/~houp/Stat205/stat205_spring2015.html). You may check your grades for the homework and exams in blackboard.

**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. We will use “R”- free downloads (to be demonstrated in class). Computers are located throughout the campus. No graphing calculators.

**Cell Phones:** They don’t exist. Keep them out of sight and turned off. You may not use a cell phone in place of a calculator in class or on tests.

**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.

### **Details on Graded Assignments:**

**Homework (45% of semester grade):** Homework covering the concepts taught in the class will be assigned regularly throughout the semester and will be posted on the course website. Homework problems from each section will be assigned but not collected or graded. These will form the basis of exam questions. There will be 9 homework collected at the beginning of the following class, each homework is worth 5% of your grade. Late homework will not be accepted. *I cannot overstress how important these assignments are to learning the material.*

**Exams (45% of semester grade):** Three in-class, non-cumulative exams will be given during the semester, each exam is worth 15% of your grade. They will be given in the middle of February, the end of March and Thursday, April 30 at 9 am. I will let you know the date of the first two exams at least one week before. All work on exams must be independent. Make-up exams will be considered only in extreme circumstances and a doctor’s note/legitimate excuse will be required. Contact me as soon as possible if you think your situation merits a makeup.

**Participation (10% of semester grade):** There will be **several unannounced brief activities** in class that count towards a class participation grade. You must be present in class to receive credit for these activities. If you miss an activity because you are late to class, then you will not receive credit for that activity. 2.5 hours a week is a small investment for the wealth of knowledge you will gain.

### **Grading Scale:**

A	90-100%	C	70-74.9%
B+	85-89.9%	D+	65-69.9%
B	80-84.9%	D	60-64.9%
C+	75-79.9%	F	Less than 60%

**Honor Code:** See the *Carolinian Creed in the Carolina Community: Student Handbook & Policy Guide*. Possible violations of academic integrity will be referred to the Office of Academic Integrity. Please read <http://www.housing.sc.edu/academicintegrity/> for full details of this procedure and definitions.

**Note:** Any changes to this syllabus will be to the benefit of the student.