STAT 503: Statistical Methods for Biology
Fall 2012
MWF 11:30 -12:20 REC 112

Instructor: Dr. Leonore Findsen
Office: MATH 535 (mailbox: MATH 533)
Phone: (765) 49-46030 (Departmental office, messages only)
E-mail: LFindsen@Purdue.edu (or lfindsen@stat.purdue.edu)
Office Hours: MW 3:30 pm – 4:30 pm, R: 3:00 – 4:00
Textbooks: Samuels, Witmer and Schaffner, Statistics for the Life Sciences, 4rd/2012 Edition, Required
We will be covering the whole book, time permitting.
Optional Book: Elliot and Woodward, SAS Essentials
Web page: http://www.stat.purdue.edu/~lfindsen/stat503/stat503_f12.html
This site will be continually updated. Please refer back to it often.

- **Course Description**: Extensive coverage of statistical methods for mature students. All examples and applications are drawn from the life, health and agricultural sciences. ~~Excel~~ SAS statistical software is used. Mathematical experience at the level of one semester of calculus is required, though no calculus is used in the course.

- **Course Goals**:
  1) Choose and identify appropriate experimental and sampling designs.
  2) Use statistical methods to analyze data.
  3) Draw conclusions from these statistical analyses.
  4) Write statistical reports using correct terminology, analyses, and graphs.

- **Blackboard (Learn)**: I will be using the new Blackboard Learn system. Blackboard will be used to host discussion groups so that you can ask questions to your classmates about the homework or lecture notes from class. I will be monitoring the groups; however, the purpose of the groups is to encourage you to help each other. Blackboard will also be used to post your grades. If there are any discrepancies of the grade on Blackboard and what you received on your paper, please contact me as soon as possible so that your score can be corrected. There will be no changes made to the grades on Blackboard after dead week (December 7) except for the final exam and material returned after that date.

- **Lectures**: PowerPoint slides will be used that contain some of the examples and figures used in lecture and will be provided in the Class Notes link on the class web site. No other class notes are provided. It is recommended that you print out the slides before lecture.

- **Final Grade**: Homework/Group Assignments (20%), Quizzes (10%), MidTerm 1 (20%), MidTerm 2 (20%), Final (30%). The final percentages needed for a particular grade are as follows: 90 – 100 = A, 80 – 90 = B, 70 – 80 = C, 55 – 70 = D, < 55 = F. +/- grades are only given in special circumstances.

- **Quizzes**: On most Wednesdays, there will be a short quiz given at the end of the class (see the Schedule link for dates). The content of each quiz will be announced at least one class session in advance. The purpose of the quizzes is to check that everyone understands certain concepts and to give examples of the way that questions are phrased on exams. No Make-up quizzes will be allowed under any circumstances; however, the lowest quiz grade will be dropped to allow for unavoidable absences. The key for each quiz will be posted on the web site shortly after it is given.

- **Exams**: There will be two midterm exams and the final examination. The tentative dates for the in-class midterms are: Midterm 1: Wednesday Sept. 26, Midterm 2: Wednesday Oct. 31. I will announce any changes to these dates in class and on the web site. The time/date/location of the final will be available later in the semester. The final exam will cover the entire course but will have emphasis on the material after Midterm 2. Each examination will contain both mathematical and conceptual (written) components. Each Midterm will be worth **20%** of your total grade and the final is worth **30%** of your total grade. A non-programmable calculator should be used on the exams. For each Midterm, you should prepare a cheat sheet of one side of an 8 ½" X 11" sheet of paper. On the final, your cheat sheet can be up to two sides of an 8 ½" X 11" sheet of paper. The tables that will be provided will be mentioned in class. No other reference materials will be provided.

  Contact me as soon as possible if you are unable to take the exam at the scheduled time. After the exam key has been posted on the web site, NO MAKEUPS will be allowed.

- **Homework**: Homework will be due on most weeks on Fridays by 3:30 pm. Please see the class web site for the dates and problem assignments as these will NOT be provided in class. The homework will normally be assigned at least one week before it is due. You are encouraged to discuss the assignments with other students (and ask questions on Blackboard) but you must write up your homework independently; identical solutions are NOT acceptable. If identical solutions are found, all the parties involved will receive a 0 on that assignment. Late homework will not be accepted under any circumstances; however, the lowest homework will be dropped (based on percentage). The key for each homework assignment will be posted on the web site shortly after it is due. I am scheduling some group assignments for this semester. I will announce them in class and on the web site when they are finalized.

  Homework must be stapled if it is longer than one page. On the first page, please include your name, the number of the problem set (e.g., HW #2), the due date and Stat 503.

- **SAS Computer Software:** Though no assignments are required to be performed using SAS this semester, I will be showing you how to perform a number of commands using this software package. The labs that were required in summer including the answers will be available on the Computer Information web page. The intent of using software is to allow the computer to perform routine calculations and graphing, while we focus on choosing the appropriate analysis tools and interpreting the results. Computer software is NOT a substitute for understanding the statistical methods. SAS is loaded on all computers in campus labs (if not, please contact ITAP). You may also obtain a copy of SAS for your own PC for class purposes free of charge by showing your student ID in STEW G65 (phone: 494-5100). Note that the files that you can obtain from STEW may not work on all Windows operating systems. In addition, you can access SAS statistical software via goremote (https://goremote.ics.purdue.edu/) if the program is not loaded on your computer. Though most (if not all of you) have had computer programming, we don't expect you to learn the complicated SAS coding from scratch but you are should be able to use the code and examples I provide to

understand how to use the program. In most cases you just need to make slight adjustments to the code to perform the calculations. The only way to learn how to use SAS is to try it! There are several sources of SAS help available. Make use of the SAS help system within the program to look up specific details. Another tool that should not be overlooked is the Web for finding SAS help. There are some links on the Computer Information Web page. If you need help in person, the Statistics Department provides a software consultant in MATH G-175, M-F, 10am-4pm except Monday from 10:30 – 11:30 (496-8250) (www.stat.purdue.edu/scs/) and the Wednesday night help session, Wednesday 7:00 pm – 9:00 pm in BRNG B275. In addition, you can post your questions on Blackboard, come to the instructor's office hours or ask for help via e-mail. SAS manuals (besides the Recommended Text) are available in the bookstore.

- **Re-grades**: Since all humans make mistakes (including the professor and the grader), errors will occur in the grading. The following procedure is required if you want your assignment re-graded:

  1) Attach (staple) a new piece of paper to the *front* of the work to be re-graded which contains the following information:
     a) The word "Re-grade" displayed prominently.
     b) Your name
     c) Stat 503. Be sure that this is clear so we know which course this is for.
     d) Which homework set, lab, quiz, or midterm is involved (e.g., Quiz 1)
     e) The relevant problem number(s) (e.g. problem 2.6) or "Addition error"
     f) A detailed explanation of the suspected error ("Please look at problem 4" is **NOT** considered a detailed explanation) or provide the total number of points which you calculated if the assignment was added incorrectly.
     g) date of resubmission
  2) Print out the solutions from the web page (at least the relevant portions) and circle the relevant piece of the solution. Attach this *behind* the work to be re-graded. (This is not required if you think that the points were added incorrectly.)
  3) Give this packet to me, or put it in my mailbox (in MATH 533). A verbal explanation is neither necessary nor appropriate.

  No exceptions will be made to this policy. On the front piece of paper, you will receive a written explanation explaining the outcome. Though the grader performs the re-grades for everything but the exams, I look at all of them to be sure that the answer is complete. Re-grade requests *must be submitted within 2 weeks of the graded assignment being returned in class or will not be accepted*. Any rudeness accompanying a re-grade request will result in the assessment of a "technical foul" penalty equal to the total number of points for the disputed question. Note this is only for re-grading, if you are confused about the answer to a problem, please come to office hours and ask.

- **General Course Policies:**

  1) If you have questions concerning the class; please post on Blackboard, come to my office hours, make an appointment or send me an e-mail. I normally look at my e-mail numerous times during the day and evening hours and try to response promptly. Remember, if you do send me an e-mail, I might not have the assignment or the book available so be very clear on what your question concerns.

2) At the beginning of class, I normally make announcements, comments and provide advice. If you do need to arrive late or leave early, please sit in a location that does not disrupt the class.
3) The use of cell phones is prohibited in class and during the exams.
4) I strongly encourage all students to read the relevant material in class before attending the lecture so you are familiar with what will be covered. I also strongly recommend that you print out the relevant PowerPoint slides and bring them to class to take notes on.

- **Academic Dishonesty:** We take academic integrity very seriously in this course. The only true way to get an education is through hard work and striving to understand the concepts on your own. Penalties for academic misconduct range from a 0 on the assignment to failure in the course with referral to the Dean of Students for further sanctions. *Note that we punish not only the person who cheats but also the person who enables the cheater.*

- **Attendance:** Though I do not take roll in class, students are responsible for all material covered in the lectures. Not all of the material discussed in class is available in the textbook. If a student misses a class it is up to that student to check with their classmates to obtain the missed material.

- **Grief Absence Policy for Students:** Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student's family.

- **Violent Behavior Policy:** Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

- **Students with Disabilities:** Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

  It is the student's responsibility to notify the Disability Resource Center of an impairment/condition that may require accommodations and/or classroom modifications. The student may use the back of the questionnaire to inform the instructor at the beginning of the semester of any accommodations that are required; however, official paperwork is required at least two weeks in advance of any exams or assignments that require accommodations (except for the first homework assignment).

- **Health and other emergencies:** If a student has a serious medical issue, the instructor needs to be contacted via e-mail as soon as possible so accommodations can be made. If e-mail is not possible, leave a message at the number provided in the syllabus. The student will also need to provide documentation of the issue. Only limited accommodations can be made if the instructor is first contacted AFTER the student turns in the assignment or takes the exam.

In the event of a major campus emergency or other circumstances beyond the instructor's control, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar. Relevant changes to this course will be posted onto the course website, http://www.stat.purdue.edu/~lfindsen/stat503/stat503_f12.html, or can be obtained by emailing the instructor at lfindsen@purdue.edu. You are expected to read your @purdue.edu email on a frequent basis.

- **Nondiscrimination:** Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

  Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies.

- **Approximate Outline**

Chapter	Approximate number of hours
1: Introduction	2
2: Descriptive Statistics	3.5
3: Probability – Binomial Distribution	2.5
4: Probability – Normal Distribution	1.5
5: Sampling Distributions	1.5
6: Confidence Intervals	4
7: Comparison of Two-Independent Samples	5
8: Comparison of Pair Samples	1.5
9: Categorical Data: One-Sample	1.5
10: Categorical Data: Two-Samples	2
11: ANOVA	1.5
12: Linear Regression	2.5
13: Summary	1

This syllabus is subject to change.