BIOL 4750 Biometrics

INSTRUCTOR:	Dr. Jim Novak
Office:	1162 Life Sciences Annex; 581-6385
Office Hours:	or by appointment
email	jmnovak@eiu.edu

Text: **Hampton, R. E. and J. E. Havel. 2006. Introductory Biological Statistics, 2nd ed. Waveland Press, Long Grove, IL. (ISBN 1-57766-380-2)**

Class Time: **Lecture MW 50 minutes, Lab F 110 minutes**

Class Location: **Lecture - 1130 Life Sciences Annex, Lab - 1130 Life Sciences Annex**

OBJECTIVES:

GENERAL:

The course is designed to give the students an introduction to simple analytical techniques for the statistical analysis of biological data. Basic descriptive statistics, graphical data analysis, hypothesis testing of means, regression and simple analysis of variance will be covered. Emphasis will be on assumptions and when to use specific procedures rather than on proofs or statistical theory. Correct use and interpretation of statistical procedures will be emphasized in the laboratory.

SPECIFIC:

1.) Develop an understanding of topics such as hypothesis testing, the normal and other distributions, and experimental design as they relate to the analysis of biological data.
2.) Recognize the utility & limitations of the following methods related to biological data: contingency analyses, t-tests, ANOVA, means-comparison procedures, linear regression, correlation, and non-parametric analyses.
3.) Develop modern computational skills through using a statistical programming language (SAS) and spreadsheet software (MS EXCEL).

FORMAT

Monday and Wednesday classes will cover specific topics in a traditional lecture/discussion format. Laboratory sessions will not occur every week, during the times when there is no lab scheduled WE WILL STILL HAVE CLASS, but it will be a traditional lecture. Both lecture and laboratory sessions will be held in the computer laboratory and will emphasize the use of SAS© to analyze data using statistical techniques previously discussed in class. Each individual will have access to a computer and the appropriate software during the laboratory class period.

GRADES

You will be evaluated based upon the completion of homework assignments, laboratory exercises, and three section exams. Homework and Laboratory assignments should be turned in on time. Exams will be open book/notes part of the exam may be take-home and require the use of computational software to complete the exam. The breakdown of credit is as follows:

Homework – 15%	Final Exam – 20%
Laboratory Exercises – 15%	Project – 15%
Section Exams – 15% each (30% Total)	Miscellaneous – 5%

MISSED EXAMS

If you cannot attend class on the day of an exam or lab, you must notify the instructor at least 24 hours prior to the exam or lab. Exams/labs will only be rescheduled for students that give adequate notification and documentation (as required) of their absence or in extreme cases (sudden illness, family emergency, etc.).

ACADEMIC HONESTY POLICY

I expect that you will never passively or actively cheat on any of my exams, or those administered by your other instructors. Any documented incidence of cheating or plagiarism will result in an automatic failing grade ("F") for the entire course, and notifications to the Dean's office and Judicial Affairs. Please feel free to speak with me, or consult your Student Handbook, if you have any questions concerning this matter.

CLASSROOM BEHAVIOR

Please turn the ringers on your cell phones off before entering the classroom. If you simply must take or make a call, please leave the classroom. Texting is also not allowed. The computers in the computer lab are for classroom use only during class. Please do not check your email, tweet or update your wall during class. Feel free to look words and concepts up or use the presentations I provide via WebCT.

DISABLED STUDENTS

Disabled Students should contact the Office of Disability Services (9^{th} St.Hall 2002; x6583) for any arrangements that need to be made in order to ensure that you get the most out of this course. Within reason, I am willing to make whatever accommodations are necessary to facilitate your learning of this material.

FURTHER ASSISTANCE

If you suddenly find yourself with a question that is burning a hole in your brain, and cannot reach me, there are several ways of obtaining the answer. Here are some examples:

1. The authors of your text have thoughtfully provided numerous problems for you to practice your statistical skills. The solutions for some of theses are listed in the Answers to Selected Problems section at the end of the book. The companion CD also has additional solutions.

2. Do not be afraid to use the internet. Google is a powerful search engine and can help you find additional information on topics. BE AWARE THAT THE QUALITY OF INFORMATION VARIES GREATLY FROM SITE TO SITE ON THE INTERNET. If the information on the site conflicts with the book you may want to bring this up in class and we can discuss it.

3. Seek help at the Learning Assistance Center (x6696) or the Counseling Center (x3413) to obtain help with studying for this class.

4. Help each other -- get to know your fellow students! Active learning through testing each other on the material is one of the most effective ways to learn where your weaknesses lie with this subject matter.

LECTURE AND LABORATORY SCHEDULE

Week	Topic	Reading	Lab Topic
1	Class Introduction; Descriptive Statistics	Chap. 1, 2, 3, 4	Lecture
2	Probability	Chap. 5.1	Lecture
3	Discrete Probability Distributions	Chap. 5.2, 5.3	*1.) Simple Statistics and Graphs*
4	Continuous Probability Distributions; Estimation	Chap. 6, 7	Lecture
5	One Sample Inference	Chap. 8	2.) Estimation and Inference on a Mean
6	Two Sample Inference	Chap. 9	Lecture Test 1
7	Correlation Analysis	Chap. 13	3.) Correlation
8	Regression Analysis	Chap. 12	Lecture
9	Regression Analysis	Handout	4.) Regression
10	ANOVA	Chap. 10	Lecture
11	ANOVA	Chap 11	5.) ANOVA
12	Categorical Data	Chap. 14	Lecture Test 2
13	Nonparametric Statistics	Chap. 9.3, 9.6, 10.5.2, 13.3	6.) Categorical Data
14	Review and Project	Chap. 15, Project papers	Project
15	Project	Project papers	Project

FINAL EXAM –

Note: All dates represent my best guess and are subject to change based upon class interest and progress