

Instructor: Dr. Robert Angus 934-4799 raangus@uab.edu

Office: 378 Campbell Hall Office Hours: Tu, Th 2:00 – 4:00 PM or by appointment

Text: **Biostatistical Analysis**, 4th ed. by Jerrold H. Zar. Prentice Hall Publishers

The objectives of the course include:

- 1) To introduce the student to appropriate statistical techniques for data analyses in common biological research situations.
- 2) To provide the student with the computer skills sufficient to store, manipulate, graph and analyze research data using two popular software packages.
- 3) To provide the student with an understanding of statistics sufficient to understand experimental designs and analytical methods described in the biological literature.

The class will include lectures and computer exercises where students will learn how to use spreadsheet software (Microsoft Excel) and a statistical software package (SAS) to summarize, present and analyze data. Problems will be assigned from each chapter in the text. Grades will be based on the homework, a mid-term exam and a final exam.

Topics To Be Covered Include:

Populations and samples

Variables and data

Scales of measurement

Frequency distributions

Graphical presentation of data

Descriptive statistics

Measures of central tendency and dispersion

Quantiles

Population parameters and sample statistics

Normal Distribution

Proportions of a normal distribution

Statistical inference

Confidence interval for the mean

Hypothesis testing

One-sample t-test

Two-sample tests

Two-sample t-test

Mann-Whitney U test

Paired sample t-test

Comparing two or more samples

One-way ANOVA, post hoc tests

Kruskal-Wallis test

Transformations

Correlation and regression

Pearson and Spearman correlation coefficients

Linear regression

Frequencies and nominal data

Goodness-of-fit test

Contingency tables

BY655-755 Biometry

Testing for normality

Skew and kurtosis

Kolmogorov-Smirnov test

Binomial and Poisson distributions

Multiple comparisons: maintaining an overall 0.05 type I error rate.

Exams

Mid-term exam Thursday, October 11

Final exam Tuesday, December 11, **10:45 AM – 12:45 PM**

★ Note the early starting time for the final exam.

Grade

Grades will be based on a weighted average of assignments (33%), mid-term exam (33%) and final exam (34%).

About the assignments – As each chapter in the textbook is covered, you will be given an assignment that gives you an opportunity to practice using the statistical procedures recently discussed in lecture. The assignments will (1) reinforce what you learned from lecture, and (2) help you learn how to use Excel and SAS to analyze real data sets.

You will be receiving new assignments regularly. **It is important that you not fall behind.** Therefore, in order to encourage (coerce) you to complete your assignments in a timely manner:

- 1) Assignments will be due one week after they are given out.
- 2) If you turn in an assignment after the due date, but no more than one week late, a 10% late penalty will be deducted.
- 3) After that, I will no longer accept the assignment.

Web site

<http://www.dpo.uab.edu/~raangus/biometry/home.htm>

This site will be regularly updated as Power Point lecture files and data sets are added. Be sure to “refresh” or “reload” to ensure that you are viewing the most recent version of the page and not an old one from your computer’s cache memory.