Attention!

This is a *representative* syllabus.

The syllabus for the course when you enroll may be **different**.

Use the syllabus provided **by your instructor** for the most up-to-date information. Please refer to your instructor for more information for the specific requirements for a given quarter.

Syllabus
Molecular Genetics 650: Data Analysis
Autumn, 2011

Text: Statistics: Concepts and Applications for Science, David LeBlanc, 2007 Edition, Tichenor Publishing and Printing; ISBN 10: 1-4275-2036-4 and workbook to accompany text

Lecture: 8:30-9:18am M,W,F, 140 Jennings Hall
Recitation:Thursdays, 8:30-9:18am Biological Sciences 684
1:30-2:18pm Parks Hall 257
Instructor: Gregory C. Booton
Office: 388 Aronoff Laboratory
Phone: 292-4570
Email: booton.1@osu.edu
Office Hours: Mon & Weds: 9:30-10:30am

Course Description

This course is designed for students with majors in the life sciences. It will focus on the practical application and interpretation of statistical analyses commonly used in biological science applications. Among the data analysis and statistical tests that will be explored will be graphical displays of data distributions, probability, z-tests, t-tests, analysis of variance, Chi-square testing for goodness of fit, hypothesis testing, correlation and regression analysis, and non-parametric methods. In addition, there will be an emphasis on experimental design, biases, and the appropriate choice of the statistical test(s) to employ in a given situation. Review of journal articles using the tests being studied will also be included in this course. In addition to three lecture classes per week, there will be one recitation class per week during which assigned problems will be reviewed. Also, there will be one arranged hour per week for computer analysis of data using statistical tests in Microsoft Excel. In summary, following completion of this course the student should have a better understanding of statistical tests commonly employed in various biological disciplines, and an insight into the proper choice and application of these statistical tests.

Grading system

The grades assigned in MG650 will be based on the amount of points obtained from a total of 600 points available for the course. This will consist of two midterms with a value of 100 points each, and one final worth 200 points. In addition, 200 points will be available from assigned homework/problem sets. Homework problems will be assigned on Wednesday's and due the following Wednesday. Homework that is due is due at the **beginning** of class on Wednesdays (note Thanksgiving week exception). At Thursday recitation (the next day), pick up your homework assignment at the beginning of recitation. We will then go over these problems during recitation. This will give you the opportunity to discover what you need to work on etc. Each homework assignment

will be worth 20 points. For full credit (20 points) homework must be turned in on time and each problem must be attempted. You will receive full credit if the problems are attempted even if the answers are not correct. The point is to try to do the problems, I want you to learn from mistakes, not be penalized for them. Partial homework credit will be as follows: 10 points for homework turned in on time but not all the problems attempted; 5 points, turned in late (up to 1 week); 0 points, not turned in, turned in more than one week late.

The final course grade will be adjusted based on the greatest number of points obtained in the course. The final grading scale will be approximately 90-100%: A- and A; 80-89%: B and B+; 65-79: C-, C, C+, and B-. Below 65 will be a D, below 50 will be an E. Attendance at midterms is mandatory, **NO** makeup midterms will be given. If you miss a midterm, you will receive a zero for that midterm, and your final grade will include that zero in the final calculation of your grade. If you have a conflict with a midterm date, please notify me as soon as possible, so that we can make arrangements for taking an alternate exam on an earlier date. The final must be taken to obtain a grade in this course. If you miss the final exam, you will be given an Incomplete. You will be allowed to make up the Incomplete grade only after presenting documentary proof that you missed the exam because of severe illness. Otherwise, your grade will be based on points received, counting the final exam as zero.

Carmen

Powerpoint presentations will be available at the Carmen website. Each student enrolled in MG650 will have access to the website for the course, and you should check there for handouts, powerpoint files, and announcements about the course on a regular basis. You are responsible for obtaining the powerpoint handouts BEFORE lecture. Handouts will not be available in lecture. If you have not used Carmen before please visit http://telr.osu.edu/carmen-help/students/guide.html for more information about student usage of Carmen.

ODS

Any student that is registered with the office of disability services (ODS) and will be taking exams at ODS will need to contact Dr. Booton as soon as possible for completion of the ODS proctor sheets.

Academic Misconduct

All instructional faculty and staff are required by The Ohio State University to forward all cases of suspected academic misconduct to the Committee on Academic Misconduct. Any form of academic misconduct, no matter how seemingly small, will not be tolerated in this course. Students are expected to abide by the Code of Student Conduct and the university's honor code as outlined in the University Student Handbook or suffer the consequences.

MG650 Weekly Schedule: Subject to modification		
Date	Subject	Week
21-Sep	Course Introduction/Outline	1
23-Sep	Chp.1: Data, Variables, Values, Experimental Design, Study Design, Bias	1
26-Sep	Chp.2: Basic Data Analysis: Graphs & Statistics	2
28-Sep	Chp. 2 cont.; Chp.3: Probability (HW1 due)	2
29-Sep	**RECITATION 1**	2
30-Sep	Chp. 3 cont.	2
3-Oct	Bayesian Analysis	3
5-Oct	Bayesian cont.; Chp.4 Binomial Distribution (HW 2 due)	3
6-Oct	**RECTIATION 2**	3
87-Oct	Chp.4 cont.	3
10-Oct	Chp.5 Normal Distribution	4
12-Oct	Chp.6: Sampling Distribution (HW 3 due)	4
13-Oct	**RECITATION 3**	4
14-Oct	**MIDTERM 1**	**4**
17-Oct	Chp. 6 cont.	5
19-Oct	Chp.7: Hypothesis Testing (HW 4 due)	5
20-Oct	**RECITATION 4**	5
21-Oct	Chp.7: Hypothesis Testing/Confidence Intervals	5
24-Oct	Chp. 7 cont.; Chp.8: One and Two Sample Tests for proportions	6
26-Oct	Chp. 8 cont. (HW 5 due)	6
27-Oct	**RECITATION 5**	6
28-Oct	Chp. 8 cont.	6
31-Oct	Chp.9: One and Two Sample Tests for sample means	7
2-Nov	Chp. 9 cont. (HW 6 due)	7
3-Nov	**RECITATION 6**	7
4-Nov	**MIDTERM 2**	7
7-Nov	Chp. 9 cont.	8
9-Nov	Chp. 9 cont. (HW 7 due)	8
10-Nov	**RECITATION 7**	8
11-Nov	**HOLIDAY NO CLASSES**	8
14-Nov	Chp.10: F-tests	9
16-Nov	Chp.11: ANOVA (HW8 due)	9

17-Nov	**RECITATION 8**	9
18-Nov	Chp.11: ANOVA	9
21-Nov	Chp. 12 Xsquare/ Goodness of Fit	10
23-Nov	**NO CLASS**	10
24-Nov	**HOLIDAY THANKSGIVING NO CLASSES**	10
25-Nov	**HOLIDAY THANKSGIVING NO CLASSES**	10
28-Nov	Chp.13: Correlation	11
30-Nov	Chp.13: Linear Regression Analysis (HW 9 & 10 due)	11
1-Ded	**RECITATION 9**	11
2-Dec	Chp. 14: Xsquare test of independence	11
5-Dec	**Final 7:30am-9:18am (Monday)**	Final