

Introduction to Biometrics 454/554 MATH 354E, Spring 2008
Dr. Wyngaard & Dr. Jahan

Lecture: Tuesday, Thursday 9:30 am – 10:45 am; room: Burruss 336
Laboratory: Thursday 1 – 2 pm, Burruss 031
Section: 0001

Dr. Grace Wyngaard, Grace

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Office Hours: W 2:00 – 3:30

TTh 10:45 – 11:30

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Office Hours: W 11:00–1:00

and by appointment

Help Desk Hotline Number for questions about computers: 540-568-3555

Required Text: Whitlock, M.C. and D. Schluter. 2008 *The Analysis of Biological Data*, Roberts and Co. publishers. These are galley proofs of the book to be published in spring 2008 and are available as course-packs in the JMU Bookstore for about \$ 35.45. Our class (as well as a few other classes across the country) is being allowed to purchase them at a greatly reduced cost. The Copy Center is photocopying the book in black and white because color printing would have been too expensive. Thus, we ask you to bring colored pens or pencils in red, blue, yellow and green. There will be times during lecture that your coloring of lines or points on the graphs will facilitate your studying.

Optional Texts: Zar, J.H. 1996. *Biostatistical Analysis*, Prentice Hall, N.J. 3rd edition. This book is especially useful as a reference text and provides more methods for performing power analyses than any other text of which we are aware. Students who plan to do research and to analyze their own data will find it to be, perhaps, the most useful book on their shelf and may want to purchase it online at the end of the course.

Course Objectives:

1. To understand which statistical procedure is appropriate for a specific research situation
2. To understand the basic theoretical concepts of inferential statistics
3. To understand the major principles of experimental design and how to apply them
4. To be able to evaluate statistical analyses performed by others, especially those presented in published scientific papers
5. To understand the application of statistics in the field of biology.

Prerequisite: You must have had Math 220 or a comparable statistics course.

Grading: Your grade in **BIO 454/MTH 354E** will be derived from:

- 20% completion of the homework and participation in the discussion
- 25% take home exam 1
- 25% take home exam 2
- 30% take home comprehensive final exam

Grading: Your course grade in **BIO 554** will be derived from:

- 10% completion of the homework and participation in the discussion
- 25% take home exam 1
- 25% take home exam 2
- 10% presentation to class on statistical aspect of your thesis research
- 30% take home comprehensive final exam

Homework: Homework assignments on short problems will be due typically on the following class meeting. Discussion Guide Worksheets of published papers must be completed typically one week after they are assigned. Completed assignments will be discussed and explained in class by randomly chosen students. Homework will not be turned in or graded, although we will gladly look at it during office hours. Statistics is best learned by working on problems or analyzing research papers, i.e., by *doing* the homework. You may work with fellow classmates on the homework, but each person should understand how to work each problem.

You are required to bring your textbook to class. Many of the graphs, tables, equations, and examples covered in class will be taken from this text. Having the book with you in class will greatly *ease* your note taking. You will also find it helpful to bring colored pencils or pens in the colors red, green, blue, yellow, purple to class, as coloring in some of the graphs will aid in visualization.

Exams: All exams will be take-home exams and will be designed to test your understanding of the principles of experimental design and how well you have mastered the application of basic concepts of inferential statistics to biological problems. Students must work independently on the take-home exams, although they may use their own lecture notes, completed homework assignments, and any published written sources for reference. All discussion and requests for clarification must be sought only from the professor. Failure to comply with this is a violation of the JMU Honor Code. **The take home final exam is due Thursday, May 1 at 10 am.**

At least one week of notice will be given before an exam is distributed to students. Examinations that are turned in late will have 10 points deducted from the score for each 24 hours, or portion thereof, that they are late. If you anticipate that you will turn in an exam late, please notify Dr. Wyngaard or Dr. Jahan as soon as possible or have someone else make the contact. Grades will not be discussed or given out over the telephone.

Attendance: Regular class attendance is highly recommended as this coursework includes regular contributions to class discussion and active engagement in homework during the computer laboratories. Receiving 10 or 20% for class discussion of homework necessitates regular contributions to class discussion. You are responsible for all class activities, including announcements.

Class participation: Five points will be deducted from the final grade (out of total of 100 points) for each time a student is randomly chosen to discuss a homework problem, but is unprepared to do so. For example, a student who comes to class unprepared and is called upon to present a

solution to the class, will have five points deducted from his/her final semester grade. If a student has an unexcused absence from class and his/her number is chosen in the random numbers table to present a homework solution, five points will be deducted from the final grade.

Computer laboratory in Burruss 031: The statistical software package SPSS has been loaded on the PCs in the computer laboratory. We will introduce most computer based homework assignments during the lecture portion of the class. We will be available to help students navigate the software during the scheduled Thursday 2 – 3 pm lab period when you can be assured that seats will be available to you. Students may work together and cooperate during these laboratories, but we emphasize again that it is important that each student understand how to use the SPSS software. You will need to know these skills for each exam and it would be a violation of the JMU Honor Code for you to seek the help of anyone other than the professor in using these facilities or software during exams. You will learn in the laboratory all the software you need to know in order to excel in this class. Access to the lab requires a code.

New Biology Department practice: There are some courses scheduled to use the Burruss 031 computer lab regularly and you will not have access to the lab at that time. Check the announcements on the door for these times.

Computer Ethics and Conduct: All students who take this course are required to abide by the policies set forth by Mr. Lon Jarvis, the Biology Department's Computer Specialist.

1. No food or drinks at any time.
2. Downloading and installing applications on lab computers is strictly forbidden and can result in your loss of lab privileges.
3. Using the printer in Burruss 031 for anything other than Biology coursework is strictly forbidden.
4. Problems in Burruss computer lab 031 should be reported to Lon Jarvis in Burruss 233, jarvislb@jmu.edu, 568-2836

THE JMU HONOR CODE should be carefully observed. Please become familiar with "Violations of the Honor Code" found in the JMU Student Handbook. Any evidence of a violation will be turned over immediately to the Honor Council for their investigation. Studying from previous examinations before a test and studying together before examinations are encouraged and are not Honor Code violations.

Course Registration: Students are responsible for registering for classes and for verifying their class schedules on e-campus.

"Students with disabilities who require reasonable accommodations to fully participate in course activities and/or meet course requirements must register with the Office of Disability Services (ODS) and contact me to discuss access issues. ODS will provide you with an Access Plan Letter that will verify your need for services and make recommendations for accommodations to be used in my

classroom. ODS is located in the Wilson Learning Center, Room 107; Phone: 568-6705.”

This is a reminder about the University deadlines and the policy on course withdrawal found on page 19 of the 2007-2008 **Undergraduate Catalog**. According to policy, a student may withdraw from a course before the deadline for course withdrawal and receive a “W” grade. **After** the course adjustment period, in extraordinary circumstances a student who cannot complete a course may approach an instructor directly and request a “WP” or “WF” grade in the class. The form and timing of such requests are to be determined by the individual instructor. In response to a request the instructor may choose to record a grade of “WP” (withdrawal passing) or “WF” (withdrawal failing), but is not obligated to do so and may choose to issue any grade other than a “W” to the student. The instructor will assign the “WP” or “WF” grade at the time final grades are entered.

The drop/add deadlines for Spring Semester 2008 are as follows:

Course Add Deadlines:

Tuesday, January 15th – last day to add a semester or first block course without instructor and academic unit head signatures

Wednesday, March 12th – last day to add a second block course without instructor and academic unit head signatures

Thursday, January 24th – last day to add a semester course *with* instructor and academic unit head signatures

Wednesday, March 19st – last day to add a second block course *with* instructor and academic unit head signatures

Course Drop Deadlines:

Tuesday, January 15th – last day to drop a semester or first block course without a “W” grade

Wednesday, March 12th – last day to drop a second block course without a “W” grade

A complete list of dates and deadlines as well as the final exam schedule for spring semester is available at http://www.jmu.edu/registrar/spring_2008.shtml.