

## Course Information for 22S:101 “Biostatistics” Summer 2010

### Instructor

Professor Dale Zimmerman, a.k.a. “Dr. Z,” 233 Schaeffer Hall, Phone 5-0818, E-mail dale-zimmerman@uiowa.edu

### Course Format

Lectures 8:30-9:55 am MTWThF, 150 SH.

### Office Hours

10:00 am - 11:00 pm Mondays, Tuesdays and Thursdays; 2:00-3:00 Wednesdays; or by appointment.

### Department Information

Department of Statistics and Actuarial Science, 241 Schaeffer Hall, Phone 335-2082

### Department Executive Officer

Professor Luke Tierney, 241 SH, Phone 335-0712, E-mail luke-tierney@uiowa.edu

### Textbook

The required textbook for this course is *An Introduction to Biostatistics*, 2nd edition, by Thomas Glover and Kevin Mitchell, 2008, Waveland Press.

Course Prerequisite — 22M:001 (Basic Algebra) or equivalent.

### Course Objective

To learn some of the basic statistical methods commonly used in the biological sciences, so that you can read, interpret, and evaluate elementary statistical analyses reported in the life science literature.

### Exams

- One 85-minute midterm exam, at 8:30-9:55 am in 140 SH on Monday, June 28.
- One 85-minute final exam, at 8:30-9:55 am in 140 SH on Friday, July 16.

Note that the location of the exams is different than the regular classroom (but it's right next door). Calculators may be used for exams, and any necessary statistical tables will be provided. One 8.5" × 11" formula sheet (both sides) may be used for each exam. If an exam is missed, a make-up exam will be permitted only if the circumstances of missing the exam satisfy university policies. The midterm exam will cover selected portions of Chapters 1-6 of the text, plus related material presented in lecture through June 25 (inclusive). The final exam will cover selected portions of Chapters 6-8, 10, and 11 plus related material presented in lecture through July 15. Thus, the final exam is not comprehensive in a strict sense of the word; however, the subject of biostatistics, like most quantitative subjects, naturally builds on itself, so an understanding of the concepts presented earlier in the course is necessary for

good performance on the final exam.

### Quizzes

Four 15-minute quizzes will be given at the beginning of lecture periods on June 14, June 21, July 6, and July 12. Policies on calculators, formula sheets, and make-ups for quizzes are identical to those policies for exams.

### Homework

Regular homework assignments are an *essential* component of the course. A typical assignment consists of 2-4 problems and will be due, in class, on the day after it is assigned (more or less daily). Assignment dates are specified on the last page of this syllabus. Although the homework is officially due in class, Dr. Z will accept homework without penalty if it is turned in by noon the day it is due. However, unless prior arrangements are made for reasons judged to be acceptable by Dr. Z, homework turned in after noon on the day it is due will receive ZERO credit because homework solutions will be posted on ICON at noon of that day. Homeworks are graded by a graduate student in Statistics, under the supervision of Dr. Z. Homeworks are returned to students at the beginning of class. Students who would like to do extra problems for practice (not to hand in) may choose from among the even-numbered problems, for which solutions are provided on pages 379-428 of the text.

You are allowed (encouraged, in fact!) to work on homework together, but must write up your own answers.

### Grading

- Midterm Exam, 30%
- Final Exam, 30%
- Quizzes, 20% (5% each)
- Homework, 10%
- Attendance, 10%

A plus-minus grading system will be used. Grades are earned relative to an absolute standard, not curved. At the discretion of Dr. Z, grade cut-offs may be adjusted downward slightly (e.g. 84.2% could earn an A-), but will never be adjusted upward. No extra credit is offered. Those students who get D's and F's on the first quiz and the first exam are given the opportunity to attend a remedial session and retake the quiz/exam. Students who scored below 50% on the quiz/exam but score above 50% on the retake will have their score on the original exam/quiz adjusted upwards to 50%; likewise, students who score between 50-60% on the quiz/exam but score above 60% on the retake will have their score on the original exam/quiz adjusted upwards to 60%. If the score on the retake is lower than the original score, the original score will be retained. The retakes will be slightly more difficult than the original quiz/exam.

Percentage of points earned	Letter grade
>97%	A+
88-97%	A
85-88%	A-
82-85%	B+
77-82%	B
74-77%	B-
71-74%	C+
62-71%	C
59-62%	C-
57-59%	D+
50-57%	D
<50%	F

### Attendance

Attendance is expected. A student who is absent more than twice without acceptable excuse will have their course grade lowered by 2% per missed class (beyond the initial two), up to a maximum of 10%. Each such absence will be noted by an e-mail from Dr. Z to the student.

### Tutors

Office hours of Dr. Z are for asking specific questions about procedural issues and homework problems, or for clarification of concepts discussed in lecture. You may also e-mail such questions to Dr. Z. If you consistently find it necessary to “get help” to do the homework problems, that’s a sign that you are “in over your head”; you should either begin to work harder, consider dropping the class and retaking it when you are more well prepared, or look into the possibility of hiring a tutor. Dr. Z can provide a list of such tutors.

### Academic Fraud

All forms of plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. All academic fraud is reported first to the departmental DEO and then to the Associate Dean for Academic Programs and Services. See Academic Fraud at [http://www.clas.uiowa.edu/students/academic\\_handbook/ix.shtml](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml) for the complete policy.

### Making a Suggestion or Complaint

Students have the right to make suggestions or complaints and should first visit with me, then with the departmental DEO (if necessary). All complaints must be made as soon as possible. For more information, visit Student Complaints at

[http://www.clas.uiowa.edu/students/academic\\_handbook/ix.shtml](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml)

### Students with Disabilities:

I would like to hear from anyone who has a disability that may require some modification of seating, testing, or other class requirements so that appropriate arrangements can be made. Please see me about this as soon as possible.

### Understanding Sexual Harassment

Sexual harassment is reprehensible and will not be tolerated by the University. It subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit this site (<http://www.sexualharassment.uiowa.edu/>) for definitions, assistance, and the full University policy.

### Reacting Safely to Severe Weather

The University of Iowa Operations Manual section 16.14 outlines appropriate responses to a tornado (see subsection (i)) or to a similar crisis. If a tornado or other severe weather is indicated by the National Weather Service radar, the Johnson County outdoor weather sirens will sound. If these sirens sound (and it is not the first Monday of the month at 9:00 am when the sirens are tested), members of the class will seek appropriate shelter immediately, continuing class if possible when the event is over.

### Student Classroom Behavior

The ability to learn is lessened when students engage in inappropriate classroom behavior, distracting others; such behaviors are a violation of the Code of Student Life. When disruptive activity occurs, a University instructor has the authority to determine classroom seating patterns and to request that a student exit the classroom, laboratory, or other area used for instruction immediately for the remainder of the period. One-day suspensions are reported to appropriate departmental, collegiate, and Student Services personnel (Office of the Vice President for Student Services and Dean of Students).

### Other Comments

- Dr. Z's experience suggests that a student's success in this course depends on three factors:
  1. the student's innate quantitative reasoning skills upon entering the course
  2. the student's scientific curiosity
  3. the student's commitment to work hard

With regard to the latter, it is expected that a student will spend 2 hours studying, doing homework, etc. outside of class for every 50-minute class period.

- Do the assigned reading before attempting the homework. It is a lazy, misguided strategy to read the problems before reading the relevant text material and then leaf back through the assigned reading to look for something similar or relevant to the homework problems.
- Do the assigned reading before (and after) lecture. You'll get more out of lecture that way.
- Remember, this is Stat 101, not Stat 001. If you've had an introductory stats class in high school, at Kirkwood, here at UI, or wherever, great — but be aware that we expect a lot more from you in this class than in your previous one.

## Detailed Schedule

<i>Date of lecture</i>	<i>Reading assignment</i>	<i>Homework</i>	<i>Quiz</i>
June 8	1.1-1.4	1.1, 1.11a	
June 9	1.5-1.7	1.3, 1.7, 1.11b, 1.19	
June 10	1.8-1.10	1.17, 1.23, 1.25, 1.27	
June 11	2.0-2.3	2.1, 2.3, 2.9, 2.11	
June 14	2.4	2.5, 2.13, 2.17, 2.25	Quiz on Chap. 1
June 15	3.0-3.2	3.1, 3.29	
June 16	3.3-3.4	3.3, 3.6*, 3.9	
June 17	3.5-3.6	3.11, 3.13, 3.15, 3.35	
June 18	4.0-4.2	4.1, 4.3, 4.5	
June 21	4.3	4.15, 4.19**, 4.23	Quiz on Chaps. 2-3
June 22	4.4-4.5	4.7, 4.11, 4.17, 4.21	
June 23	5.0-5.3	5.7	
June 24	6.0-6.2 <sup>†</sup>	6.1, 6.3, 6.11, 6.21	
June 25	Catch-up day		
June 28	Midterm exam		
June 29	6.3-6.4, 6.6	6.7, 6.17, 6.19a, 6.27, 6.33	
June 30	7.0, 7.4, 7.6-7.7	7.3, 7.9, 7.15, 7.21	
July 1	7.2-7.3	7.1, 7.5, 7.11, 7.35	
July 2	7.1, 7.5	7.19, 7.29	
July 6	8.0-8.1	8.1, 8.19	Quiz on Sec. 7.0, 7.2-7.4, 7.6-7.7
July 7	8.2 (p. 221 only), 8.4 <sup>††</sup>	8.3, 8.5, 8.11	
July 8	11.0-11.2	11.1, 11.19, 11.43	
July 9	11.3 <sup>†††</sup> -11.4 <sup>††††</sup>	11.3, 11.15, 11.23	
July 12	10.0, 10.2	11.29, 10.9	Quiz on Chap. 8
July 13	10.3 <sup>†††††</sup> , 10.1	10.3, 10.7, 10.13	
July 14	10.1	10.5, 10.23	
July 15	Catch-up day		
July 16	Final exam		

\* Add (c) Find the probability that a randomly chosen tree has 3 egg clusters; (d) Find the probability that a randomly chosen tree has at most 3 egg clusters.

\*\* Find the confidence interval for the mean only.

<sup>†</sup> Omit the subsection of Section 6.1 called "Sample Size Considerations."

<sup>††</sup> Omit the subsection of Section 8.4 called "Paired Comparisons."

<sup>†††</sup> Omit the subsection of Section 11.3 called "The Intrinsic Model."

<sup>††††</sup> Omit the subsection of Section 11.4 called "Partitioning the Chi-Square Test."

<sup>†††††</sup> Omit the subsections of Section 10.3 called "Kendall's Measure of Correlation  $r$ ," "A Test for Independence or Zero Correlation," "Large Samples," and "Theory."