

MA110E – STATISTICS

Rivier College - Spring 2006 Thursday, 6:30 – 9:00 pm in Mem 201

Instructor

bil bonnice

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Office hours: Please let me know whenever you need help. Many ideas in this class will be new to you and you will need to study them beyond the classroom in order to understand them fully. You are invited to stop by my office whenever I am there or make an appointment for a different time. I will also respond to e-mail questions. My scheduled office hours are:

MWF 9:30 – 11:00 in STH 230 or STH 135; Thursday 4:00 – 5:00 top floor of Regis; Thursday 5:30 – 6:30 in Mem 101, and by appt. (Feel free to call me at home or at my office.). **Note:** I have office hours immediately before every class and will be happy to remain after class if anyone would like to talk with me then.

Textbooks: *STATISTICAL REASONING for everyday life* (2nd edition) by Bennett, Briggs, and Triola; Addison-Wesley, ISBN 0-201-77128-4. *Activity-Based Statistics, Student Guide* by Richard L. Schaeffer, and others, ISBN 0-387-94598-9.

Brief course description: An introduction to the basic techniques of statistical analysis for students who need a working knowledge of procedures for evaluating statistical data. Topics may include normal distributions, the central limit theorem, parameter estimation, hypothesis testing, analysis of variance, chi-square, correlation, regression, and an introduction to nonparametric statistics.

Course Schedule: See accompanying document. Usually we will study a chapter from *STATISTICAL REASONING* for each class and write up an assignment to be turned in. Also, as a rule, every week we will do one in-class experiment.

Course Objectives:

- To help students understand and appreciate the major concepts of statistics
- To engage students in statistical reasoning
- To help students learn to read and understand statistical statements
- To develop students' abilities to create statistical models and use these models to solve problems
- To engage students in the solution of problems, especially open-ended problems, that can be approached using statistics
- To develop students' ability to write about statistical ideas and problem solutions
- To help students learn the basic data analysis

Teaching Strategies:

- Presentation of examples and strategies
- Large and small group discussions, and activities
- Practice and learning through performing and analyzing experiments
- Applications to demonstrate relevance and extend learning
- Active student engagement in group work and discussions
- Quizzes, and tests to encourage and monitor learning

All students are encouraged to interact with one another and the instructor by asking questions and contributing ideas.

Course Requirements:

- Regular attendance in class
- Homework to be ready to turn in at the beginning of each class
- Active participation and engagement in full-class, small-group, and individual activities
- Completing and turning in all assignments
- Quizzes, mid-term test, and final examination
- A significant project and an in-class presentation of the results of your project.

Classroom Policies:

- Active participation requires attendance and arrival to class in time to be prepared for work when the class period begins. Students arriving late on the day of a quiz or test will not be given extra time.
- Respect your classmates as well as your instructor. Discussion in class will pertain to the topic of the course. All students have a right and responsibility to ask questions and give insight related to the understanding of course content. Students having a large number of questions should consult the instructor outside of class.
- Participation in large and small group discussions is required and assessed for active engagement and contribution.
- The time spent on this course outside of class should average six to twelve hours per week. This includes reading the textbook, reviewing class notes, doing assigned work, working on projects, and preparing for tests.
- All work turned in on tests, quizzes, and individual papers must be entirely your own. Behavior contrary to this will result in a grade of F on the assignment. On homework, acknowledge any ideas you received from others. Students should be aware of and adhere to the college's policy on plagiarism.
- You are encouraged to study together outside of class. The work you turn in should be entirely your own, though. If you receive help in completing the homework, make sure you put away any notes, write the answer in your own words, and give credit to your collaborators.

Classroom Policies continued:

- Attendance will be taken each class period. You are expected to attend all classes. If you miss class, you are responsible for doing all classroom activities you missed, getting the notes from a classmate, and turning in all work on the day it is due. If you miss more than two classes, you must meet with the professor to discuss the advisability of your remaining in the course for the remainder of the semester. See attendance factor below.
- If unforeseen and unavoidable circumstances keep you from attending class on the day of a test or quiz, you must contact the instructor immediately to explain the absence and, if approved, schedule a make-up. Documentation of the reason for absence and promptness in arranging a make-up is advised.

Guidelines for group work:

1. Every group member has the right and responsibility to contribute to the group's work. All members of the group are to be respected and listened to. If you find that you tend to dominate the group discussion, make an extra effort to enable and encourage other group members to participate. If the work is to be submitted, make sure there is a copy (preferably more than one) in class on the day it is due.
2. Share your ideas with others. You'll be surprised to find out how often your ideas will help lead to a right answer! No idea or question is stupid.
3. Arrive prepared and ready to start. When discussing homework in a group, be sure to try all problems in advance and identify where you have questions.
4. During an in-class activity, do not ask the instructor for assistance until everyone in the group has the same question.
5. Take responsibility for your own learning. Share your strategies/questions with the aim of having others understand what you are getting at and where/why you are stuck. This is different from "I couldn't get ..." and expecting another student to show you their answer.
6. Avoid taking responsibility for someone else's learning (since they will not learn). Listen to others with the aim of understanding their strategies and questions. This is more beneficial (and harder) than just showing them how to do it your way.
7. Even when there are no questions, spend some group time sharing resolutions. It feels great to show something amazing you've come up with or to share in someone else's solution. Take some time to enjoy these moments.
8. Have fun, but stick to task.

Assessment: There will be one in-term test, a final exam, and one project. Class participation is measured by attendance and participation in class. All homework and tests must be written neatly.

Computation

Of Grades

The weights in determining the final grade are as follows:

Homework assignments	20%
Project	10%
Miscellaneous(Group Participation; Class Discussion; Write-ups, Other Activities)	5%
Three Quizzes	30%
Take-home MidTerm	15%
Cumulative Final examination	15%
Self-evaluation at the end of the semester, due Th. 4/20	5%

The **final exam** will be cumulative and will be from 6:30 to 9:00 on Thur., May 4 in Mem 201.

I want the students in my classes NOT to be competitors but to cooperate to help one another learn. To foster cooperation, I never "scale" grades. I use the Rivier College standard grade boundaries to assign grades:

	87-89 B+	77-79 C+	67-69 D+	These grade boundaries will not be changed.
93-100 A	83-86 B	73-76 C	63-66 D	I would be very happy if everyone earned an A.
90-92 A-	80-82 B-	70-72 C-	00-62 F	

Attendance Factor: Before assigning the final grade, the score based on the above percentages will be multiplied by an attendance factor. Each student's attendance factor starts out as 1.03, but for each absence one percentage point (0.01) will be subtracted from this factor. Arriving up to 30 minutes late will count as half an absence. A student who is present but inattentive may also be penalized. A student with a 78 average who never misses a class would receive $(78)(1.03)=80.34$, a B-, while another student with a 78 average on work and 11 absences, would receive $(78)(.92)=71.76$, a C-.

GRADING OF THE HOMEWORK:

I will not have time to grade each problem individually. Instead I will be checking that you have done the homework. I will rely on you to check your own work. If you are not sure of your solution, write down *specifically* what you are not sure about and ask about it in class. I will get an overall impression of each assignment that you turn in and aware it a check plus(110%), a check(100%), a check minus(80%), or a check minus minus(60%). **You can get full credit for any problem that you can't do, by asking a specific question whose answer will help you solve the problem.** There will be no credit given for late homework. It is important to keep up with your work.

COOPERATION IS THE NAME OF THE GAME:

We're all here to learn and we'll learn easier and have more fun if we all work together to help one another learn.

I expect you to relate to one another as mutual helpers rather than competitors. I'd like all students in my classes to have a cooperative attitude about helping one another to understand and learn. I plan activities that require you to work in collaborative groups and I expect that individuals will presentation the results of group work in front of the class to enhance our learning.

Our goal is for us to build a supportive learning climate in which we have a productive and enjoyable semester. We're in this together. We sink or swim together.

Americans with Disabilities Act (ADA): Rivier College wants to provide reasonable accommodations to students with disabilities. To accomplish this goal effectively and to ensure the best use of our resources, the College expects students to provide timely notice of a disability to the Office of Special Services for verification and for evaluation of available options. Any student whose disabilities fall within ADA should inform the instructor within the first two weeks of the term of any special needs or equipment necessary to accomplish the requirements for the course. To obtain current information on this procedure, contact the Office of Special Services at telephone extension 8497.

NOTE: You are responsible for understanding and complying with the contents of this syllabus. If you have any questions about this syllabus please raise them at any time during the semester.

MA 110E, Statistics – Schedule Outline for Spring of 2006

Date Due	Part of Text to study	Special Occurrences
Thur., Jan. 26	Chap. 1: Statistical Studies	
Thur., Feb. 2	Chap. 2: Measurement in Statistics	
Thur., Feb. 9	Chap.3: Visual Displays of Data	Quiz #1 on Chaps. 1,2
Thur., Feb. 16	Chap. 4:Describing Data	
Thur., Feb. 23	Chap. 5: A Normal World	Quiz # 2 on Chaps. 3, 4
Thur., Mar. 2	Chap. 6: Probability and Statistics	Pass out Take-home MidTerm through Chap. 6. Pass out statement of PROJECT.
Thur., Mar. 9	Spring Vacation, NO CLASS.	
Thur., Mar. 16	Sect. 7.1: Seeking Correlation Sect. 7.2: Interpreting Correlations	
Thur., Mar. 23	Sect. 7.3:Best-Fit Lines and Prediction Sect. 7.4:The Search for Causality	Take-home MidTerm due.
Thur., Mar. 30	Chap. 8: From Samples to Populations	Draft of PROJECT due
Thur., Apr. 6	Sect. 9.1:Funds. of Hypothesis Testing Sect. 9.2:Setting up Hypothesis Tests Sect. 9.3:	Quiz # 3 on Chaps. 7, 8
Thur., Apr. 13	Sect. 9.4: Hypoth. Testing: Further Considerations Sect. 9.5: Hypoth. Testing: Population Proportions	
Thur., Apr. 20	Sect. 10.1: Ideas of Risk and Life Expectancy Sect. 10.2: Statistical Paradoxes	SELF-EVALUATION due Project Presentations begin
Thur., Apr. 27	Sect. 10.3: Hypoth. Testing with Two-Way Tables	Finish Project Presentations
Thur., May 4	FINAL EXAM (CUMULATIVE ON ENTIRE COURSE)	

ASSIGNMENT # 3

MA110E – Statistics

Rivier College - Spring 2006, Thur., **MEM 201 (NOTE!)**.

Special For This Course: I will come to our classroom, now definitely **MEM 201** an hour before class in case anyone would like to ask me any questions, etc.

Text: *STATISTICAL REASONING for everyday life* (2nd edition) by Bennett, Briggs, and Triola. (www.aw-bc.com/bbt)

Assignment # 3, due Thursday, February 9:

Quiz # 1: will be from 6:30 – 7:00 on this **Thur., Feb. 9**, and will cover **Chapters 1 and 2**. You may bring to the quiz an 8 and one-half by 11 “cheat sheet” written on both sides in addition to the “cheat sheet” that you made for the previous quiz. If you think that you would like more time, I will be here early and you may start at 6:00.

Section 3.1:

- (A) In BBT(Bennett, Briggs, Triola) study Section 3.1, “Visual Displays of Data”, p. 87 – 97.
- (B) Write up the answer to *(Tott)Time out to think* on page 93.
- (C) Write up the answer to Review Questions # 3 and 4 on p. 93.
- (D) Write up the answers to the following Exercises on p. 94 – 95 / 14,16, 20,22.

Extra Credit: Do any one of the *Projects for the Web and Beyond* or *In the News* on page 97.

Section 3.2:

- (A) In BBT(Bennett, Briggs, Triola) study Section 3.2, “Picturing Distributions of Data”, p. 98 - 113.
- (B) Write up the answer to *(Tott)Time out to think* on page 102 and the one on p. 106.
- (C) Write up the answer to Review Questions # 5 on p. 109.
- (D) Write up the answers to the following Exercises on p. 111 - 113 / 18, 22,23,24,25.

Extra Credit: Do any one of the *Projects for the Web and Beyond* or *In the News* on page 113.

Section 3.3:

- (A) In BBT(Bennett, Briggs, Triola) study Section 3.3, “Graphics in the Media”, p. 113 – 128.
- (B) Write up the answer to *(Tott)Time out to think* on page 121.
- (C) Write up the answer to Review Questions # 4 on p. 122.
- (D) Write up the answers to the following Exercises on p. 123 – 127 / 10, 14, 7, one of 16 - 20, 24.

Extra Credit: Do any one of the *Projects for the Web and Beyond* or *In the News* on page 128.

Section 3.4:

- (A) In BBT(Bennett, Briggs, Triola) study Section 3.4, “Cautions about Graphics”, p. 128 – 138.
- (B) Write up the answer to *(Tott)Time out to think* on page 131.
- (C) Write up the answer to Review Questions # 5 on p. 135.
- (D) Write up the answers to the following Exercises on p. 135 – 137 / 2, 3, 8, 9, 10.

Extra Credit: Do one of *Projects for the Web and Beyond*, p. 137 / 12 or *In the News* on page 138 / 1 – 6.

MA 110 Self-evaluation

This Self-evaluation will be due Thursday, April 20 . As stated in the syllabus, it will count as 5 per cent of final your grade. You will be scored on the quality of your evaluation of yourself , your work in this course and your progress and under-standing. In other words you could say that you deserve a low grade in the course and give good reasons for that and receive maximum credit on the Self-evaluation. On the other hand, you could say that you deserve an “A” in the course and receive a low score on the Self-evaluation because you did a poor job justifying your claim for an “A ‘.

1) In addition to stating what grade you think you deserve in the course, along with justification, you should evaluate yourself on the following:

2) How well did I work with my classmates in and out of class?

3) How much did I work outside of class and how was the quality of that work? Did I study the assigned readings thoroughly with a pencil and paper at hand to try to work out examples before reading them and to work out things I didn't understand? Did I write down questions to be answered in class? How well did I do on the homework and how much time did I put in on it? What was the quality of my effort?

4) QUIZZES: How did I do on them? How well did I prepare for them?

5) IN-CLASS PARTICIPATION : Did I ask questions in class? How much did I contribute to class discussion? How much did I contribute to the in-class statistical experiments?

6) UNDERSTANDING, PROGRESS, and ACHIEVEMENT: How much did I learn and understand in this course? Did I meet my expectations? How much progress did I make? (Compare where you are now to where you were at the beginning of the course. Has there been much change?) What have you achieved in this course?

7) CRITIQUE OF THE PROFESSOR: What did you like least about my teaching? What did you like most? Suggest at least one thing that I could do to improve my teaching.

8) CRITIQUE OF THE COURSE: What did you like least about the course? What did you like most? Suggest at least one thing that could be done to improve the course.

9) CRITIQUE THE TEXT.

10) MISCELLANEOUS: Here say anything else you'd like to say.