Math 203 – Elementary Statistics

Coker College   Term IV   05 March 2009 - 28 April 2009

COURSE INFORMATION

Course: Elementary Statistics, MAT 203
Credits: Three Semester Hours
Prerequisites: MAT 101 (Intermediate Algebra) or equivalent
Logistics: Lake City High School, 8:05 - 10:30 PM, Tuesdays and Thursdays
Office Hours: Before and after class, and by appointment
Required Calculator: TI-83/84
Text: *Elementary Statistics: Picturing the World, 4th edition* by Larson and Farber
Class Web Site: `http://www.WissenPlatz.org/courses/2009/MAT203.html`

Instructor: Dowman P. Varn
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Cell Phone: (864) 357 6924

COURSE DESCRIPTION

This statistics course satisfies the Coker College Liberal Arts Studies requirement for mathematics. Students majoring in a variety of disciplines will acquire certain statistical skills and knowledge to apply in other courses and research. Students who are successful in this course should realize an understanding of the issues entailed in drawing conclusions in light of variability. Technology will be used extensively. A wide variety of applications are included in the course in areas such as quality control, engineering, education, social sciences, biological sciences, psychology, sports, physics and environmental studies. Both a theoretical and applications approach will be used. The historical development of statistical methods will also be included where appropriate.

COURSE GOALS

At the end of the course, the student should be able to do the following:

- Formulate questions that can be addressed with data;
- Collect, organize, and display relevant data to answer these questions;
- Understand and apply the basic concepts of probability;
- Select and use appropriate statistical methods to analyze data;
- Develop and evaluate inferences and predictions that are based on data;
- Use technology that is appropriate and essential in statistical processes;
- Apply appropriate statistical procedures;
- Meaningfully describe real sets of data;
- Coherently describe what results of statistical tests mean in terms of their practical applications; and
- Evaluate the validity of the assumptions behind statistical tests.

USE OF TECHNOLOGY

Computers and calculators are powerful tools for students of statistics. The text provides access to a wide range of activities for computers and graphing calculators. All students in the course must have a TI-83/84 calculator with a built-in statistical menu. The graphing calculator will be used extensively in the course and other data analysis tools, such as Excel, may also be used.

TECHNOLOGY TRAINING

In this course, students will be given training in the use of the graphing calculator to input data, display it, and compute calculations for one and two variable statistics, for hypothesis testing, and linear regression equations.

LEARNING ACTIVITIES

Classes will consist of lecture, question/answer, small group assignments, in-class and out-of-class assignments. These assignments are necessary for you to review and practice in order firmly understand the concepts. They are essential for your success on tests. Some of these assignments will be collected and graded.

ATTENDANCE POLICY

Come to class. Be on time. Each student is allowed two unexcused absences without penalty, but after that there are only two acceptable reasons for an absence: (i) An illness or other emergency medical condition that requires a doctor's visit and is thus documented; and (ii) A death in the immediate family, ie, spouse, sibling, child or parent. Three tardies count as an absence, and leaving early is the same as being tardy. Beginning with the third unexcused absence, I reserve the right to dismiss the student from the class, or lower the student's final grade by one letter grade per unexcused absence (beyond the allotted two).

CLASSROOM DECORUM

The very essence of the learning environment is the free flow of information in the classroom. Thus I promote a classroom atmosphere were students are encouraged to ask questions and participate in discussions. However, there must be guidelines to ensure a productive learning experience. Please turn cell phones and pagers off. If you absolutely must be available to take a call during class, please use the vibrate mode, and quietly excuse yourself for the duration of your short conversation. Please do not talk to classmates during lecture. Please do not bring children–or anything else–that might be disruptive to class. In short, please be polite and respectful of others. And of course please do come to class prepared to learn.

GRADING POLICY

Statistics is best learned by doing statistics. With this philosophy in mind, I put significant emphasis on homework.

- Homework (40%): There will be approximately eight to ten homework/in-class assignments which will be turned in for a grade. The average grade of the homework assignments (the lowest homework score having been dropped) counts 40% toward the final grade. Homework is due at the beginning of class. Late homework is not accepted. If you are unable to attend a class, you may ask a classmate to turn in your homework for you, or alternatively, you may mail your homework to me. Provided it is postmarked on or before the due date, it will be accepted. You may send such homework to: Dowman Varn, 507 Bruce Drive, Camden SC 29020. Solutions to homeworks will be posted on the class web site, and graded homeworks will be return the next class period.

- Tests (60%): There will be two in-class tests and a final exam. The first test carries a weight of 15%, the second test is worth 20% and the final exam carries a weight of 25%. Make up tests are not given. In the event that a student has a legitimate reason for missing a test (see Attendance Policy), the final exam will be substituted for the missing grade. Otherwise, the grade on the test is a zero. Everyone must take the final exam. Solutions to tests will be posted on the class web site and graded tests will be returned as quickly as possible.

Since I do not know in advance how difficult the tests and homework assignments will be, I can not provide in advance a correspondence between numerical scores on tests and a letter grade. I will, at any time, be glad to give a student an estimation of her progress in the class, and an approximate letter grade equivalent based on the work to date.

COURSE SCHEDULE

This schedule of class topics is tentative, and thus subject to change. The dates of the tests are fixed however, and the material covered in each test will be adjusted as necessary.

March 05	Chapters 1 & 2	Introduction to Statistics & Descriptive Statistics
March 10	Chapters 3 & 4	Probability & Discrete Probability Distributions
March 12	Chapters 4 & 5	Normal Distributions & the Central Limit Theorem
March 17	No Class	
March 19	Test I (15%)	Test I covers Chapters 1 - 4
March 24	Chapter 6	Confidence Intervals
March 26	Chapter 7	Hypothesis Testing with One Sample
March 31	Chapter 8	Hypothesis Testing with Two Samples
April 02	Chapter 8	Review of Chapters 6 - 8
April 07	Chapter 9	Correlation & Linear Regression
April 09	Test II (20%)	Test II covers Chapters 5 - 8
April 14	Chapter 9	Correlation & Linear Regression (cont'd)
April 16	Chapters 9 & 10	Chi Square Tests
April 21	Chapter 10	Analysis of Variance
April 23	Chapter 10	Analysis of Variance (cont'd) & Nonparametric Tests
April 28	Final Exam (25%)	Cumulative Final Exam

LIBRARY & TECHNOLOGY CHECKLIST

This class requires the following proficiencies:

- Email/Internet use: Class information and some assignments will be communicated to students via their Coker email address; syllabi and some assignments can be accessed at the class web site.
- Graphing Calculator (TI-83/84)
- IceBox: Communication with instructor and students via `http://icebox.coker.edu/`.

DISABILITIES STATEMENT

Reasonable accommodations will be provided for qualified students with disabilities. If a student has a disability that will likely require some accommodation by the instructor, the student must contact Robin Richardson, Assistant Registrar for Retention, Advising, and Disabilities Services to provide proper documentation.

CORE SKILLS ASSESSMENT

The goal of Coker College is "to graduate students with the ability to think analytically and creatively, and to write and speak effectively" (from the College Mission). This course is supposed to especially promote each student's analytical thinking and effective writing. Therefore at the end of the semester, the following aspects of each level will be used to assess properly achieved skills.

Analytical Thinking:

- Remedial level: Student demonstrates limited use of technology to solve problems; chooses incorrect methods of inferential statistics to test hypotheses; makes confusing and conflicting conclusions; has difficulty with applications of basic probability.
- Freshman-Sophomore level: Student uses correct terminology and measurements to analyze data and describe data presented in displays; chooses and uses correct methods of inferential statistics to test hypotheses or estimate population parameters and makes reasonable conclusions; uses the language of probability to describe validity of inferences or to describe data distributions; uses technology appropriately to solve problems.
- Junior-Senior level: Student recognizes use of and understands statistical methods in situations other

than those posed in class or in the textbook; recognizes and explains validity in statistical claims; uses technology in multiple ways to solve problems.

• Graduate level: Student creates an inquiry and applies descriptive and inferential statistical methods to get data and analyze results.

Effective Writing:

• Remedial level: Student has difficulty communicating via written descriptions, results, conclusions, analyses, and predictions; uses poor grammar in written assignments.

• Freshman-Sophomore level: Student writes in complete, grammatically correct, sentences how measures of central tendency and variation are affected by extreme values, the meaning of standard deviation, z-scores, and expected value and how they apply to specific data, and the decision made concerning a null hypothesis, why the decision was made, and a conclusion related to the specific circumstances.

• Junior-Senior level: Student writes a clear and coherent analysis of a statistical report with an examination of the validity of the methods used and the conclusions reached.

• Graduate level: Student writes an articulate and comprehensive report of the inquiry and outcomes resulting from the statistics applied (see above).