

Textbook: (required) Utts, J. and Heckard, R. (2004). *Mind on Statistics, second edition*, Brooks/Cole., Belmont, CA.

Important dates:

- ? Last day to Add/Register/Pay: Sept. 3 at 5 p.m.
- ? 100% tuition refund deadline: Sept. 3 at 5 p.m.
- ? Labor Day Recess: Sept. 5- Sept. 7
- ? 75% tuition refund deadline: Sept. 24 at 5 p.m.
- ? Drop deadline: grade of "W": Oct. 22 at 5 p.m.
- ? Thanksgiving Break: Nov. 24 – Nov. 28
- ? Classes End: Dec. 11
- ? Finals: Dec. 13 – Dec. 18

Other important dates can be found at <http://www.gvsu.edu/register/f04caln.html>

Course Description: A technique-oriented approach to statistical problems with emphasis on applications. Descriptive statistics, sampling, probability distributions, estimation, testing hypotheses, t-tests, regression and correlation, chi-square tests, one-way analysis of variance will be discussed. A statistical software package will be used to provide computational assistance.

STA 215 is part of the Mathematical Sciences General Education Foundation Category. The following is an excerpt from the General Education catalog describing these courses:

The development of formal reasoning and abstract thought have been defining characteristics of civilization. Through the study of the mathematical sciences, students will develop their ability to reason and solve problems with abstract ideas or quantitative information. Full participation in many professional and public policy discussions requires the ability to express scientific, economic, or social issues in quantitative terms. Study of the concepts, history, contexts, and methodologies of the mathematical sciences assists students in becoming mathematically or quantitatively literate.

Courses introduce students to the foundations of mathematical, logical and quantitative reasoning. They will develop each student's mathematical, statistical, quantitative, or logical reasoning skills in ways that allow these skills to be transferred or used in other content areas.

Course Objectives: STA 215 will meet the Mathematical Sciences General Education Foundation Category goals and the General Education Skills Goals (articulate expression, thinking critically and creatively, information literacy, and integrating knowledge from multiple areas) by requiring that students:

- ? think critically about data and data collection,
- ? enter and analyze data using SPSS,
- ? use appropriate graphical and numerical summaries for univariate and bivariate data,
- ? apply standard statistical inference procedures,
- ? draw conclusions from both data summaries and statistical inference procedures,
- ? communicate findings to a non-mathematical audience, and
- ? work collaboratively with other students.

Prerequisite: MTH 110 or equivalent

Student Expectations: Students are expected to:

- ? READ INSTRUCTIONS.
- ? have a calculator with them each day. (I strongly recommend the TI-83.)
- ? read required textbook sections prior to class.
- ? bring paper to use in the classroom.
- ? actively participate in class.
- ? stay on task during class time.
- ? help each other to complete class projects.
- ? turn in homeworks, projects, and other materials on time.

Blackboard Website: We will use a web-based course management system called Blackboard. Assignments and solutions, practice exams, course announcements, projects, and other items of interest will be posted to the website.

Statistics Folder: You will be given a manila folder on which you are to write your last name, first name. All assignments should be stapled in the upper left corner, have your name in the upper right corner, and be turned in in your Statistics folder. You may print a score sheet off Blackboard that you can attach to your statistics folder on which you are invited to keep track of your course grade. **The folder is not to be used as storage for class materials.**

Computer Disk: You should have a disk with your name on it on which to save lab work and download data sets.

Projects: Part of class time will be used to complete hands-on projects. Some of these will be collected in your Statistics folder and graded. **No late projects will be accepted.** *The total points for projects is 200.*

Homework: There will be six to eight homework assignments for the course. **Homework is to be turned in at the beginning of class on the due date in your Statistics folder.** Homework will be penalized 20% of the points possible for each portion of a class period it is late. Homework more than two class periods late will be given a score of 0. *The total points for homework is 300.*

Exams: Three midterm exams and a final exam will be given. Each midterm exam will be worth 100 points. The final exam will be worth 200 points. **There will be no make-up exams without the prior approval of the instructor and a written confirmation from an attending physician or other person of authority. The instructor decides who is a person of authority.** *The total points for the three midterm exams is 300 and the total points for the final exam is 200.*

Grading:

| | |
|---------------------|-------------|
| <u>Total points</u> | <u>1000</u> |
| Midterm Exams | 300 |
| Final Exam | 200 |
| Homework | 300 |
| Projects | 200 |

The cutoffs for different letter grades will be no higher than the following:

- at least 930 points A
- at least 825 points B
- at least 700 points C
- at least 600 points D

Pluses and minuses will be given.

Drop Deadline: No drop slips will be signed after the deadline.

Final Exam Date: Section EB Wednesday, Dec. 15, 2-3:50
 Section HB Thursday, Dec. 16, 2-3:50

Note about the disk in the back of the text: You should have the disk in the back of the text. Most likely any data sets that we need from the disk will be saved on the student network, but the disk has some other nice study material. Check it out!

COURSE OUTLINE (TENTATIVE)

| Topic | Reading Assignment |
|---|---------------------------|
| statistical thinking | 1-9 |
| design of experiments | 59-74 |
| sampling | 88-112 |
| summaries of categorical data | 13-22 |
| summaries of quantitative data | 23-42 |
| normal curve and the Empirical Rule | 39-47 |
| bivariate quantitative data, scatterplot, correlation, regression | 131-160 |
| bivariate categorical data, conditional distributions | 171-174 |
| randomness and probability | 203-211 |
| sampling distributions of \bar{x} and the Central Limit Theorem | 293-296, 301-311 |
| confidence interval on μ , t-distribution | 313-317, 329-334, 391-410 |
| hypothesis test on μ , Type I and II errors | 355-363, 376-382, 437-444 |
| sampling distribution of \hat{p} , confidence interval on p | 296-301, 330-343, 355-373 |
| inference on paired data, paired t-test | 391-396, 405-410, 445-448 |
| inference for two independent samples, two-sample t-test | 396-398, 411-414, 450-455 |
| Analysis of Variance | 561-570 |
| two-way tables, χ^2 test, confidence interval on $p_1 - p_2$ | 418-421, 527-538 |