# Syllabus

# Math/Stat 1300 Elementary Statistics with Computers
# Fall 2016

**Course** MATH/STAT 1300 meets MWF 10:00-10:50 in RH 236
`http://math.slu.edu/~clair/stat1300`

**Instructor** Dr. Bryan Clair
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Ritter Hall 109, 977-3043

**Office Hours** M 12-1, T 10-11, W 3-4, or by appointment.
Stop by my office anytime, and if I'm around I can usually help you.

**Textbook** The textbook for this course is Moore, Notz, Fligner, *The Basic Practice of Statistics*, 7ed. You do not need the electronic access codes - any format of the book is fine.

**Technology** We will be using the free, open source statistical software package R in this course. Software downloads, manuals, and help are available at `https://www.r-project.org`.

**Homework** Written homework will be due weekly, usually on Wednesdays. This will usually be a combination of written work and R computations. Your work should be neat and legible, with plenty of blank space on your pages so I have room to write comments. Staple your homework!

I encourage you to work together on homework, but write up results separately.

I grade homework on a 10 point scale. On time homework will receive at least a 6/10. Late written homework is always accepted for half credit, but I will not write comments.

**Exams** I give makeup exams only for severe and *documented* reasons.

**Exam 1** Wednesday, September 28
**Exam 2** Friday, October 28
**Final Exam** Monday, December 12, 12:00-1:50

There will be a handful of short in-class quizzes (dates to be announced).

**Grading** Grading is on a straight scale (uncurved), with 90%,80%,70%,60% guaranteeing A,B,C,D respectively. Grading is weighted as follows:

Homework: 20%
Quizzes: 10%
Exam 1: 20%
Exam 2: 20%
Final Exam: 30%

**Course Topics**

These are topics we will certainly cover, probably in this order, though much may change.

| Week | Chapters | Topics |
|---|---|---|
| 1 | Ch 1. | **Descriptive Statistics:** Displaying data. Frequency distributions and histograms. |
| 1-2 | Ch 2. | **Averages and Variation:** Mode, median, mean. Variation, standard deviation. Percentiles and quartiles. |
| 3 | Ch 3. | **The Normal Distributions:** Normal probability distributions. Standard units. Areas under normal curves. |
| 4-5 | Ch 4, 5. | **Regression and Correlation:** Scatterplots. Linear regression. Correlation coefficient. |
| 6 | Ch 8, 9. | **Sampling and experimental Design** |
| 7 | Ch 12,13. | **Elementary Probability Theory:** Events. Independence. Random variables. Probability distributions. |
| 8-9 | Ch 14,15. | **Sampling Distributions:** Binomial distribution. Sampling distributions. Central limit theorem. Sampling distributions for proportions. |
| 10 | Ch 16, 17. | **Inference:** Confidence intervals. Significance tests. |
| 11-12 | Ch 20, 21. | **Hypothesis testing:** Inference about means Tests involving the mean. Student?s t-distribution. Two sample problems. Power. Type I and II errors. |
| 13 | Ch 22, 23. | **Inference about proportions:** Tests involving proportions. Choosing sample size. |
| 14 | Ch 25. | **Chi-Square:** Tests of independence. Goodness of fit. |

**Honesty**

Students are expected to be honest in their academic work, as per the Honesty Policy of the College of Arts & Sciences, available on the internet at

`http://www.slu.edu/college-of-arts-and-sciences-home/undergraduate-education/academic-honesty`

You are allowed to use any and all outside resources to help you complete your homework. Students who work together must write up results separately.

For exams and quizzes, no notes or outside help is allowed. In cases when two or more students collaborate on an exam, all will be subject to penalties.

**Disabilities**

In recognition that people learn in a variety of ways and that learning is influenced by multiple factors (e.g., prior experience, study skills, learning disability), resources to support student success are available on campus. Students who think they might benefit from these resources can find out more about Course-level support (e.g., faculty member, departmental resources, etc.) by asking your course instructor. University-level support (e.g., tutoring/writing services, Disability Services) by visiting the Student Success Center (BSC 331) or by going to http://www.slu.edu/success. Students who believe that, due to a disability, they could benefit from academic accommodations are encouraged to contact Disability Services at 314-977-8885 or visit the Student Success Center. Confidentiality will be observed in all inquiries. Course instructors support student accommodation requests when an approved letter from Disability Services has been received and when students discuss these accommodations with the instructor after receipt of the approved letter.