

# MAT 341: Mathematical Statistics

## Spring 2009

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**Course description:** This course is a sequel to MAT 340, Probability. We will focus primarily on the theory of statistics, though applications will also be discussed in class and analyzed in assignments. A course in applied statistics (for example, those offered in the Biology, Economics, Political Science, Psychology and Sociology departments) would be an excellent complement to Mathematical Statistics.

**Text:** *Mathematical Statistics with Applications, 7th Edition* by Wackerly, Mendenhall and Scheaffer; Duxbury, 2008.

### Course goals:

- Develop rigorous foundation for statistical data analysis
- Gain experience with methods of estimation, hypothesis testing, linear models, analysis of variance, and nonparametric statistics
- Understand how statistics shapes our daily lives
- Prepare for further study and application of statistics

### Course components:

**Reviews.** There will be two **in-class** reviews, scheduled for **Feb. 26** (chapters 9 and 10) and **April 9** (chapters 11 and 13). The reviews will be open book, closed notes.

**Homework.** Homework will be assigned each day. The homework for each week will be due the following Tuesday in class.

**Projects.** Students will create an online project portfolio consisting of three components:

1. *Statistics in the News* – link to a newspaper article that uses statistical techniques learned in this class, and write an online review and critique of the methods, assumptions and conclusions in the article. Due by class time on Feb. 17
2. *Statistics in Science* – link to a research article in a scientific journal that uses statistical techniques learned in this class, and write an online review and critique of the methods, assumptions and conclusions in the article. Due by class time on Mar. 31.

3. *Statistics on Campus* – work with a partner to gather data from an office, organization or group on campus, and analyze it using techniques learned in this class. Write an online report analyzing the data that you gathered. We will have a “Stats on Campus Jamboree” on the last day of class, so you can share your project with the rest of the class.

**Note:** all surveys must be approved in advance. Other data should be approved for release by the relevant office or group.

See <http://www.bio.davidson.edu/courses/genomics/studentpages.html#2008> for examples of appropriate the appropriate format and style for these online reports. I will schedule *Dreamweaver* tutorials for those who do not have experience with building web pages.

***Final Exam.*** The final will be comprehensive, open book and self scheduled.

**Office Hours:** I will have regular drop-in office hours Monday, Wednesday, and Friday 3:30 – 5:00, and Thursdays 12:30-1:30. You will often find me available in my office at other times. Please feel free to drop by anytime I am in the office, or make an appointment for a specific time other than those I have listed.

**Grading Policies:** Review I, Review II, homework, project portfolios, and the final exam will each count as 20% of the final course grade.