

# STATISTICS FOR ENGINEERING APPLICATIONS

STAT 3704, CRN: 15970

Spring 2012

**Course Description:** This class offers an introduction to statistical methodology with an emphasis on engineering experimentation: probability distributions, estimation, hypothesis testing, regression, and analysis of variance. The intent of this course is to provide the student with a foundation of basic statistical tools and prepare the student for understanding statistical methods in the future. The emphasis in the course will be on the application of statistical methods and interpretation of their results. This will be a fairly fast-paced class so I recommend that you make every effort to stay with or ahead of the material. With that in mind, I encourage you to approach me in regards to any questions or problems you may have. Only one of the following statistics courses may be taken for credit: 3704, 4604, 4705, and 4714.

**Prerequisite:** Math 2224

**Instructor:** Zhibing(Alex) Xu

*Email:* [xzb8382@vt.edu](mailto:xzb8382@vt.edu)

*Class:* TR 2:00 – 2:50; Smyth 146

*Office:* Hutcheson 503 T

*Office Hours:* TR 3:00am-4:00pm  
and by appointment

**TA:** Tianlei Chen / Jinhui Sun

*Email:* [tlchen@vt.edu](mailto:tlchen@vt.edu) / [sunjh@vt.edu](mailto:sunjh@vt.edu)

*Office:* Hutcheson 403H / 403S

*Office Hour:* by appointment

## Materials:

*Text:* Vining, Geoffrey&Kowalski, Scott M.(2011).*Statistical Methods for Engineers* (3<sup>rd</sup>ed.).Brooks/Cole. (Emphasis on Chapters 1-9.)

*Software:* A complete statistical package is needed – either Minitab or JMP.A free, full version of JMP is available through Virginia Tech at: <https://www.ita.vt.edu/Apps/WebObjects/NetSoftware>. A full version of Minitab is available by visiting <http://vt.e-academy.com>. A 1-year (approximate) license costs \$29.99 and a 30 day trail is available for free.

*Calculator:* A basic scientific calculator with statistical functions will be needed. TI-83, TI-83 Plus, TI-84, or TI-84 Plus calculators are preferred and allowed for exams as long as the memory of the calculator is cleared before each exam.

*Scholar:* <https://scholar.vt.edu/portal/site/ql>, announcements, lecture notes, etc. will be posted here.

**Grading:** Grading for this course will be conducted on the standard 100 point scale. The grading breakdown is as follows:

Homework (5):	25%
Quizzes(2):	5%
Exam 1:	20%
Exam 2:	20%
Final:	30%

**Homework:** Homework will be assigned, and due, on a regular basis. Due dates may vary, but will be announced in class as well as posted on Scholar with the assignment. Solutions will typically be provided after the submission of the homework. Some guidelines for homework are as follows:

1. Late homework will not be accepted, no exceptions.
2. For the homework problems, you may work with others but you must submit your own answers. If cheating is suspected, then all materials will be submitted to the Honor Court.
3. Work must be shown in order to receive credit and an appropriate software package must be used where appropriate. Paste important output of the software.
4. All problems will be graded. You are responsible for checking your answers with posted solutions on Scholar.
5. The solutions found on Scholar are the level of work expected for the class.
6. From the day the homework grades are posted, you have one week to dispute the grade – please talk to the grader first before contacting me.
7. Homework problems should be compiled in the correct order i.e. don't put problem one last.
8. Staple multiple pages together.
9. Put your name on it! If we don't know whose work it is, we can't give you a grade.

**Attendance/Quizzes:** From time to time we may have announced or unannounced attendance quizzes in class. It will be your loss if you miss an unannounced quiz. The quizzes are open book and notes.

**Exams:** There will be two exams during the course of the semester. The exams are closed book and closed notes. The dates will be announced in class, at least one week in advance. There are no make-up exams unless I receive a letter from the dean of your college indicating you have an approved reason for missing the scheduled exam date. Tentative dates are as follows:

Exam 1 – Thursday, March 1<sup>st</sup>

Exam 2 – Thursday, April 12<sup>th</sup>

**Final:** The final is comprehensive, closed book and closed notes. It is scheduled for Wednesday, May 9<sup>th</sup> 1:05~3:05pm.

**Special Requests:** If for any reason you need special considerations please let me know as soon as possible. We can work together to make sure your needs are met. All requests must be approved by the university. Feel free to visit [www.ssd.vt.edu](http://www.ssd.vt.edu) for additional info.

**Honor Code:** The Virginia Tech Honor Code will be strictly enforced in this course. All graded assignments must be composed of your own work. More information about the Honor Code can be found at [www.honorsystem.vt.edu](http://www.honorsystem.vt.edu).

All dates and policies are subject to adjustment as the class progresses. In such instances, I will give you sufficient notice. Some deadlines are as follows:

Add Deadline: Jan 23, 2011

Drop Deadline: Feb 27, 2011

Final Exam Rescheduling Deadline: Apr. 13

Withdraw Deadline: Apr. 27

Last day of class: May 1

The “A” to “F” grading system is used in all courses and the use of plus/minus grades is strongly encouraged. The recommended grading scale is a ten-point, plus/minus scale which, for example, would have 80-82 as a “B-,” 83-86 as a “B” and 87-89 as a “B+.” 90+ as a “A”. There are no “A+” grades.

Useful link for learning JMP: <http://web.utk.edu/~cwiek/201Tutorials/>