

**Math 3670**  
**Probability and Statistics with Applications**  
**Fall 2017**

***Catalog Description***

Introduction to probability, probability distributions, point estimation, confidence intervals, hypothesis testing, linear regression and analysis of variance.

***Prerequisites***

MATH 2401 or MATH 24X1 or MATH 2411 or MATH 2551 or MATH 2550 or MATH 2X51.

***Textbook***

Jay. L. Devore, Probability and Statistics for Engineering and the Sciences, 9th Edition, Thomson Learning.

***Instructors***

Dr. Alexandre Locquet, Office 206.

E-mail: [alocquet@georgiatech-metz.fr](mailto:alocquet@georgiatech-metz.fr). **When you email me, please start the subject of the email with [Math 3670].** Failure to place this in the subject line could cause your email not to be read.

***Lectures***

Every day: 9:30 am-10:30am, green room.

***Attendance***

Attendance is worth 1.5%. Attendance sheets will be used to count the number of absences. Students who do not miss more than 2 lectures during the entire term get 1.5% for attendance. Students who miss more than 2 classes, for any reason, get 0% for attendance. Attendance sheets will be used to count the number of absences.

***Office hours***

TBA

## ***Grading Policy***

<b>Homework</b>	<b>3.5%</b>
<b>Quiz 1 (90 mins)</b>	<b>30%</b>
<b>Quiz 2 (90 mins)</b>	<b>30%</b>
<b>Final Exam (3 hours)</b>	<b>35%</b>
<b>Attendance</b>	<b>1.5%</b>

The quizzes and the final examination will be closed-book and notes. The use of a calculator will be allowed. Any request for regrading of a quiz or homework assignment must be made within one week of getting the homework/quiz back. There will be no make-up quizzes for any reason. If you have an acceptable reason for missing a quiz, the weight associated to the quiz will be transferred to the Final Exam. Illness is an appropriate reason for missing a quiz, but you will need to produce a doctor's note (not a prescription) stating that you are not able to take the quiz. A make-up final exam may be scheduled only for medical reasons documented by a doctor's note (not a prescription).

## ***Important Dates***

<b>Quiz 1</b>	<b>TBD</b>
<b>Quiz 2</b>	<b>TBD</b>
<b>Final Exam</b>	<b>TBD</b>

## ***Homework***

Problems will be assigned roughly once every 1 or 2 weeks. **Homework should be submitted electronically on T-Square as a single pdf file.** The submission time on T-Square will be used to determine whether a homework is submitted on time or not: no exceptions will be made. A completion grade will be assigned. If a given homework 1) has been submitted on time and 2) every problem is answered, the student gets 0.5% credit. **If at least one of the conditions above is not satisfied, 0% credit will be assigned. Specifically, if a homework is turned in late, for any reason other than medical, 0% credit will be assigned to that homework.** A medical reason must be documented by a doctor's note (not a prescription) stating that you were not able to turn in the homework on time.

An assignment might be due on the final instructional class days and might be based on material covered during the WBFEE.

## ***Tentative Topical Outline***

- *Probabilities of Events:*  
Random experiments, events, sets, and probabilities  
Probabilities for equally likely outcomes, elementary counting  
Independent events  
Conditional probability, Bayes theorem  
Applications
- *Random Variables and Their Distributions:*  
Discrete random variables: Binomial, geometric, Poisson, multinomial  
Continuous random variables: Exponential, normal, gamma, Weibull  
Poisson process, waiting times  
Applications
- *Expected Values and Functions of Random Variables:*  
Expectations and variances of standard random variables  
Expectations of functions of random variables  
Chi-square as the square of a normal, sums of independent random variables and reproductive properties of standard distributions  
Central limit theorem  
Applications
- *Descriptive Statistics:*  
Random samples: data collection and presentation  
Sample statistics: mean, median, quantiles
- *Statistical Estimation:*  
Point estimates and their properties  
Probability distributions for estimator, the t and F distributions  
Confidence intervals
- *Hypothesis Testing:*  
Single sample tests, means, variances  
Comparison of two populations, means and variances  
Applications
- *Simple Linear Regression and Correlation:*  
Fitting a regression line  
Inferences on the regression  
Predictions for future responses  
Correlation  
Applications

## ***Student-Faculty Expectations Agreement***

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

## ***Honor Code***

Students are, of course, expected to abide by the [Georgia Tech Honor Code](#). Instances of academic misconduct will be viewed very seriously and reported to the Dean of Students.