

## SYLLABUS FOR MATH 3215: Introduction to Probability and Statistics

- **TEACHER:** Heinrich Matzinger. E-mail: matzi@math.gatech.edu, until June 20th, then Lu Jun, E-mail jlu39@math.gatech.edu
- **WHERE and WHEN:** 10:40 noon - 11:50 am, TR Skiles 254
- **OFFICE HOURS** Matzinger: Monday 1:15:00-2:45 pm or any time by appointment, OFFICE Skiles 264. For Lu Jun to be determined later.
- **LECTURE NOTES** of H. Matzinger, which will be sent out over E-mail.
- **FINAL GRADE:** consists of 60% of the work during semester and 40% final
- **MIDTERMS:** There will be several tests. The tests contain problems like in the homework and preparation tests and you need to learn some proofs from Matzinger's Lecture Notes.
- **HOMEWORK:** The majority of the homework will be given with solution sets, but will not be graded.
- **FINAL EXAM:** consists mainly of problems like in the midterms and proofs and definitions from Matzinger's Lecture Notes.
- **INFORMATION ABOUT THE CLASS:** the lecturers will be communicating with you by E-mail. Also look up the school of math web page for the class 3215. finally the text book is: Probability and Statistical Inference, Hogg and Tanis, 8th edition, Pearson

### COURSE DESCRIPTION:

**Probability of events:** Random experiments, events, sets, and probabilities; Probabilities for equally likely outcomes, elementary counting; Independent events; Conditional probability, Bayes theorem.

**Random Variables and Their Distributions:** Discrete random variables: Binomial, geometric, Poisson, multinomial; Continuous random variables: Exponential, normal; Poisson process, waiting times.

**Expected Values and Functions of Random Variables:** Expectations and variances of standard random variables. Expectations of functions of random variables; Central limit theorem; Law of large numbers.

**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;