

## Statistics 514 Summer 2019

**INSTRUCTOR** Dr. Piyas Chakraborty

**OFFICE MATH** 512

**EMAIL** chakrabp@purdue.edu

**MAILBOX MATH** 533

### **COURSE WEB PAGE**

<http://www.stat.purdue.edu/~chakrabp/STAT514/home.htm>

All course material including announcements, lecture notes, homework and exam material, datasets and SAS files are posted on the above webpage.

### **CLASS MEETS**

MTWThF 9:20am-10:40am at REC 302.

### **OFFICE HOURS**

I hold office hours on Mondays and Thursdays from 3pm to 4pm in MATH 512. If you need to see me outside regular office hours for any reason, please email me and I will try to accommodate you.

If you have any question about the homework grades, please directly email your TA: Mr. Phillip Shepard (email: [pshepard@purdue.edu](mailto:pshepard@purdue.edu)). He also holds office hours on Fridays from 11am to 12pm in the STAT help room (HAAS 115).

### **COURSE OBJECTIVES**

To be able to plan an experiment in such a way that the statistical analysis results in valid and objective conclusions. To learn a variety of experimental designs and be able to choose an appropriate design for a specific experiment. To be able to perform the proper statistical analysis and draw valid conclusions from a specific experiment.

### **PREREQUISITE**

This course is effectively a continuation of (not a substitute for) STAT 512. Much of the preliminary information will be considered a quick review of the material covered in that class. While it is not recommended that you take this course without taking STAT 512, you should absolutely not take this course without having taken a good introductory course in statistics covering probability distributions, sampling distribution, sample mean, variance, hypothesis testing, Z-test, t-test, two-sample paired t-test, two-sample independent t-test, one-way ANOVA, and simple regression.

### **TEXTBOOKS**

- *D. C. Montgomery, Design and Analysis of Experiments, 9th Edition, Wiley, Required.*
- *G. W. Oehlert, A First Course in Design and Analysis of Experiments, W. H. Freeman, Reference.*
- *Box, Hunter, and Hunter, Statistics for Experimenters, Wiley, Reference.*

### **COURSE OUTLINE**

- Overview and Basic Principles
- Simple Designs and Analysis of Variance
- Block Designs, Latin Squares and Related Designs
- Full and Fractional Factorial Designs
- Experiments with Random Factors
- Nested and Split-Plot Designs

## COMPUTER SOFTWARE

We will use SAS 9.4 to perform data analysis in this class. The intent of using software is to allow it to perform routine calculations and graphing, while we focus on choosing the appropriate analysis tools and interpreting the results. Computer software is NOT a substitute for understanding the statistical methods, and you will not have access to a computer during exams. More information on SAS will be posted on the course Web page.

SAS is available in the Purdue computing labs. You may also obtain a copy of SAS for your own PC for class purposes free of charge via the following link with your Purdue career account:

[https://communityhub.purdue.edu/storefront/product/sas\\_personal](https://communityhub.purdue.edu/storefront/product/sas_personal).

## FINAL GRADES

Your final letter grade will be based on four components (subject to change):

- Attendance/Quizzes - 5%
- Homework - 25%
- Midterm Exam - 35%
- Final Exam - 35%

The percentage grades needed to achieve the letter grades A, B, C, or D will follow **approximately** the following scale: 90 - 100 = A, 80 - 89 = B, 70 - 79 = C, 55 - 69 = D, 0 - 54 = F. The minimum score needed for a given letter grade could be lowered if necessary but will not be raised. The minimum scores for assigning **pluses and minuses** will occur at **approximately** 3-point increments.

## HOMEWORK

Homework assignments will be assigned every Friday, and will be due next Friday in class. Please bring a hard copy to the class, or drop it in my mailbox in MATH 533 by 4pm on Fridays (if you can't make it to the class). Late submissions will not be graded. The schedule for assigning and collecting homework may be changed on some weeks, but will be announced sufficiently ahead of time.

## EXAMS

Dates, times and locations of the midterm and final exams will be announced later.

## CAMPUS EMERGENCY

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Here are ways to obtain information about the changes in this course.

- Purdue homepage: <http://www.purdue.edu>
- Sign up for Purdue Emergency Alerts