

# COLLEGE OF CHEMISTRY COURSE GUIDE (../INDEX.HTML)

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## PH 142 - INTRODUCTION TO PROBABILITY AND STATISTICS IN BIOLOGY AND PUBLIC HEALTH (4 UNITS)

### COURSE OVERVIEW

#### SUMMARY

PH 142 is an introduction to statistics and data science, primarily for MPH and undergraduate public health majors, and others interested in public health majors. The course material focuses on the biomedical applications of basic data summarization using the statistical programming language: R, classical problems in probability/statistical distributions (Normal, binomial, Poisson), and statistical inference techniques. For Chemistry and Chemical Biology majors, this course can be taken as an allied subject. Priority is given to public health majors but the class is generally accommodating of students in other majors.

#### PREREQUISITES

High School Algebra

Course is offered in the Spring, Summer, and Fall

#### TOPICS COVERED

- Describe distribution of variables (mean, standard deviation, etc.)
- Basic coding skills to plot distributions and manipulate data frames
- Compute probabilities

- Properties and assumptions of the Binomial, Poisson, and Normal Distribution
- Central Limit Theorem
- Statistical tests and confidence intervals
- Chi-squared test and matched t-test
- ANOVA
- Bootstrapping and permutation tests

## WORKLOAD

### COURSEWORK

- 2 midterms
- 10 Homework Assignments using R
- Infographic due near the end of the semester (on topic of your choice)
- 1 final exam based on topics covered in lecture material, homework, lab sections, and textbook material (finals week)

### TIME COMMITMENT

3 hours of lecture per week (typically webcasted). 1 hour of discussion/1 hour of laboratory per week (not mandatory). 3-5 hours of homework per week.

## CHOOSING THE COURSE

### WHEN TO TAKE

This class fulfills 4 units of an Allied subject (for Chemistry/Chemical Biology majors) and requires no previous knowledge of statistics.

## ADDITIONAL COMMENTS AND TIPS

The information above is specifically based on the course in Fall 2018 taught by Professor Corrinne Riddell and Professor Alan Hubbard. While the basic statistical skills learned are consistent, the material has been known to vary with different professors

Good for people who have no coding experience and would like to learn the basic

Not necessarily relevant to any College of Chemistry courses but skills gained can be utilized for data analysis and presentation in research

Written by: Divya Natesan

Last edited: Fall 2018

## COLLEGE OF CHEMISTRY PEER SERVICES

Made by Angela Lee, c/o 2019



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