LIFS3150 Biostatistics (Spring 2023)

Time: Tue Thur 9:00AM - 10:20AM
Place: Rm 1104

Intended Learning Outcome:

On successful completion of this course, students are expected to be able to:

1. Apply the basic methods of statistical analysis, particularly those commonly used in biological and medical studies.
2. Determine the extent to which it is appropriate to include statistical analysis in experimental design.
3. Critically analyze experimental results and interpret them to draw conclusions.
4. Design and carry out independent research and apply creativity to results analysis through problem solving of given datasets.

Course Format:
There will be two 80-minute sessions per week. **Grades will be based on course attendance (5%), midterm (35%), final exam (60%).**

Course Instructors:
Prof Kai Liu (Email:kailiu@ust.hk, Tel: 2358-7277, Office: 5445)

Textbook:

Brigitte Baldi & David S. Moore (2013) The Practice of Statistics in the Life Science, The Third Edition, W. H. Freeman and Company New York

Lecture Outline and Schedule:

Feb 7	Introduction
	PART I Exploring Data
	Exploring Data: Variables and Distributions
Feb 9	Picturing Distributions with Graphs
Feb 14	Describing Distributions with Numbers
	Exploring Data: Relationships
Feb 16	Scatterplots and Correlation
Feb 21	Regression Two-Way Tables
	PART II From Exploration to Inference
	Producing Data
Feb 23	Samples and Observational Studies
Feb 28	Designing Experiments
	Probability and Sampling Distributions
March 2	Introducing Probability/General Rules of Probability
March 7	Discrete Probability Distributions
March 9	The Normal Distributions
March 14	Sampling Distributions
	The Idea of Inference
March 16	Introduction to Inference
March 21	Inference in Practice/ Review Session 1
	PART III Statistical Inference
	Inference about Variables
March 23	Inference about a Population Mean
March 28	Comparing Two Means
March 30	Midterm (Part I-II)
April 4	No class
	Inference about Relationships
April 13	Inference about a Population Proportion/Comparing Two Proportions
April 18	The Chi-Square Test for Goodness of Fit
April 20	The Chi-Square Test for Two-Way Tables
April 25	Inference for Regression
April 27	One-Way Analysis of Variance (ANOVA)
May 2	Follow-up Tests / Two-Way ANOVA
May 4	Nonparametric Tests
May 9	Review Session 2
	Final Exam (Comprehensive)