

LIFS3150 Biostatistics (Spring 2016-2017)

**Time/ Place: Tue, Thr 09:00-10:20AM
Room 1104 Academic Concourse**

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%), assignments (5%) midterm exam (40%) and final exam (50%).**

Course Instructors:

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

Office hour: Tuesday: 12:00-2:00pm

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

Tentative Lecture Outline and Schedule:

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| | PART I Exploring Data |
| | Exploring Data: Variables and Distributions |
| 2 Feb | 1 Picturing Distributions with Graphs 2 Describing Distributions with Numbers |
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| | Exploring Data: Relationships |
| 7 Feb | 3 Scatterplots and Correlation |
| 9 Feb | 4 Regression |
| 14 Feb | 5 Two-Way Tables |
| | PART II From Exploration to Inference |
| | Producing Data |

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| 16 Feb | 7 Samples and Observational Studies |
| 21 Feb | 8 Designing Experiments |
| | Probability and Sampling Distributions |
| 23 Feb | 9 Introducing Probability/10 General Rules of Probability |
| 28 Feb | 12 Discrete Probability Distributions |
| 2 March | 11 The Normal Distributions |
| 7 March | 13 Sampling Distributions |
| | The Idea of Inference |
| 9 March | 14 Introduction to Inference |
| 14 March | 15 Inference in Practice |
| 16 March | Review Session |
| 21 March | Midterm exam |
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| | PART III Statistical Inference |
| | Inference about Variables |
| 23 March | 17 Inference about a Population Mean |
| 28 March | 18 Comparing Two Means |
| 30 March | 19 Inference about a Population Proportion |
| 6 April | 20 Comparing Two Proportions |
| 11 April | 21 The Chi-Square Test for Goodness of Fit |
| | Inference about Relationships |
| 20 April | 22 The Chi-Square Test for Two-Way Tables |
| 25 April | 23 Inference for Regression |
| 27 April | 24 One-Way Analysis of Variance |
| 2 May | 25 Follow-up Tests/Two-Way ANOVA |
| 4 May | 26 Nonparametric Tests |
| 9 May | Review Session |
| | Final Exam |