MMPH6150 Advanced statistical methods II

Coordinator: Prof Tim Tsang

Course Description:

This course will provide a basic, yet thorough introduction to probability theory and mathematical statistics that underlie many of the commonly used techniques in public health research. The frequentist and Bayesian approaches to parameter estimation, interval estimation and hypothesis testing will be compared and contrasted. All theoretical material will be motivated by problems from epidemiology and public health.

Prerequisite: CMED 6100 Introduction to biostatistics; CMED 6020 Advanced statistical methods I

Term 3 (Tuesday)   **Contact person:** Miss Yanfang Xu

Date	Time	Lecture Topic	Lecturer	Venue
06 May 2025	6:30 – 9:00 pm	1. Frequentist inference, interval estimation and hypothesis testing Practical	Prof Tim Tsang	TBC
13 May 2025	6:30 – 9:00 pm	2. Bootstrap method Practical	Prof Tim Tsang	TBC
20 May 2025	6:30 – 9:00 pm	3. Regression discontinuity design Practical	Prof Tim Tsang	TBC
27 May 2025	6:30 – 9:30 pm	Tutorial 1	Prof Tim Tsang	TBC
03 June 2025	6:30 – 9:00 pm	4. Survival analysis, multiple imputation Practical	Prof Tim Tsang	TBC
10 June 2025	6:30 – 9:00 pm	5. Multilevel analysis Practical	Prof Tim Tsang	TBC
17 June 2025	6:30 – 9:00 pm	6. Longitudinal analysis Practical	Prof Tim Tsang	TBC
24 June 2025	6:30 – 9:00 pm	7. Marginal structural model Practical	Prof Tim Tsang	TBC
08 July 2025	6:30 – 9:30 pm	Tutorial 2	Prof Tim Tsang	TBC
15 July 2025	6:30 – 9:00 pm	8. LASSO regression Practical	Prof Tim Tsang	TBC
22 July 2025	6:30 – 9:30 pm	9. Bayesian inference Practical	Prof Tim Tsang	TBC
29 July 2025	6:30 – 9:30 pm	Tutorial 3	Prof Tim Tsang	TBC
05 Aug 2025	6:30 – 9:30 pm	Examination	-	TBC

Course Assessment: Coursework: 50%
                                Examination: 50%

Recommended References: 1.   Everitt B.S. and Hothorn T. A handbook of statistical analyses using R. Boca Raton, Florida: Chapman & Hall, 3rd edition.

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