

STAT2020: 統計學 I

Lecture: M789
綜合三館 203

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Textbook: Mathematical Statistics and Data Analysis (3rd), John A. Rice
統計學 I & II 使用同一本教科書
統計學 I 將涵蓋 chapters 1~6, 8, 10

Software: R and RStudio
<http://cran.r-project.org/>
<http://rstudio.org/>

Lab: 統計軟體 R 的操作教學及實作 (同學自備電腦)
R for Data Science
<https://r4ds.had.co.nz/>

Grading: midterm (40%), final (40%), hw+lab (2 pts for each; up to 20pts)

Course Info: 置於 iLMS 數位學習系統 (<http://lms.nthu.edu.tw>)

Topics & Tentative Schedule:

week	Topics (chapters in Textbook)		R Lab (R for Data Science)
1	Lecture0: Intro to the course of Statistics	Ch1	
2	Lecture1: Basics about probability	Ch1	Lab1: Introduction to R and some basics
3	Lecture2: Random variable and distribution	Ch2	
4	Lecture3a: Expectation	Ch4	Lab2: Random number generation & basic plots
5	Lecture4: Joint distribution	Ch3	
6	Lecture3b: Expectation	Ch4	
7	Lecture5: Law of large numbers & central	Ch5	Lab3: Experiment for CLT

	limit theorem		
8	Review		
9	Midterm		
10	-		
11	Lecture6: More on binomial and normal distributions	Ch2&6	Lab4: Data summary & more plots
12	Lecture7: General principles for estimation	Ch8	
13	Lecture8: Maximum likelihood estimation	Ch8	Lab5: Data manipulation & R markdown
14	Lecture8: Maximum likelihood estimation	Ch8	
15	Lecture9: Bayesian analysis	Ch8	
16	Lecture10: Data summary and case studies	Ch10	
17	Review		
18	Final exam		