

DATA ANALYSIS (ISOM 5510), FALL 2020

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Course Materials

- Lecture notes and exercise questions are downloadable from course website (<https://canvas.ust.hk>);
- Reference book: “Statistics for Business, Decision Making and Analysis”, by R. Stine and D. Foster;
- Software: Excel.

Evaluation

- A. Participation 5%.
- B. In-class exercises 40%. Group work (about 2-3 students per group)
- C. Final exam 55%. (All MC questions)

Course Organization

Main Topics

- Data and Variation (Ch2 - Ch6)
 - Types of data, §2.1,2.2,2.4
 - Describing categorical data, §3.1-3.4
 - Association between categorical variables, §5.1-5.2
 - Describing numerical data, §4.1-4.4
 - Association between numerical variables, §6.1-6.3, 6.5
- Probability Model (Ch7 - Ch9)
 - Basic concepts of probability, §7.1-7.2
 - Independence, conditional probability, §7.3, 8.1-8.3
 - Random variable, mean and variance §9.1-9.4
- Association between Two Random Variables (Ch10)
 - Portfolios, joint probability, §10.1-10.2
 - Dependence between random variables, §10.3
 - Mean and variance of weighted variables, covariance, §10.4, 10.6

- Normal Probability Model (Ch12)
 - Normal random variable and normal Model, §12.1-12.2
 - Normal quantile plot, §12.3-12.4
- Sampling and Sampling Distributions (Ch13 - Ch14)
 - Concepts of population, sample and sampling, §13.1-13.2
 - Sampling distribution, §14.1
- Standard Errors and Confidence Intervals (Ch15)
 - Confidence interval for μ , §15.1-15.4
 - Determine the sample size, §15.5
- Statistical Hypothesis Testing (Ch16)
 - Concepts, §16.1
 - One sample z - and t - tests, §16.2 - 16.3
- Linear Regression Model (Ch19 - Ch21)
 - Linear pattern of data, residual plot, §19.1-19.3,19.5,
 - Nonlinear pattern of data and transformation, §20.1-20.4
 - The model and conditions, §21.1-21.2
 - Inference in regression, §21.3
 - Prediction interval, §21.4