

ADVANCED STATISTICS

Sept. 2008

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- Course Topics:
 - Review the distinction and relationship between *probability* and *statistics*, the concepts of *sampling*, *sample statistic*, *sampling distribution*, *sampling error*.
 - Definitions of *random variable*, *expectation/variance*, *probability distributions*, *joint/marginal/conditional probability distributions*.
 - *Correlation* between *two* random variables—*statistical independence*, *covariance/correlation*, *bivariate normal distribution/simple linear regression*.
 - *Iterated expectation*, *total variation/variation between groups/variation within groups*.
 - Quantifying *sampling error (statistical inference)*—*p-value/statistical significance/hypothesis testing/confidence interval*.
 - *Correlation exploration*—*stratified sampling* (remove variation between groups), *cluster sampling* (remove transportation cost).
- Texts:
 - 統計學 楊維寧 著 (新陸圖書公司 (02)2351-2587)
 - 統計學習題解答 楊維寧 著 (新陸圖書公司 (02)2351-2587)
- Background Assumed: None.
- Grading:
 - (1) Quizzes (20%) (2) Midterm (30%) (3) Final (30%) (4) Homework (20%)
- Exam Policy:
 - (1) No make-up quiz will be given.
 - (2) A zero will be given on any suspected cheating quiz and exam. (I will be the judge).
 - (3) Turn in homeworks in the beginning of the class and no late homeworks will be accepted.