

## Statistics, Fall 2022

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Time: W2W3W4

location: Social Science 102

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*Data is the new oil. It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc to create a valuable entity that drives profitable activity; so must data be broken down, analyzed for it to have value.* (Clive Humby, 2006)

*Big data is like teenage sex: everyone talks about it, nobody really knows how to do it, everyone thinks everyone else is doing it, so everyone claims they are doing it.* (Dan Ariely, 2013)

*In school, we rarely learn probability & statistics, leaving us victims of our mind's own inability to process random events.* (Neil deGrasse Tyson, 2017)

This is the first course in statistics, *a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data* (Merriam-Webster dictionary), for second-year econ-major students. This semester, we focus on probabilities, random variables, distributions, estimations, and hypothesis tests.

Unlike most statistics courses in Taiwan, students at National Taiwan University must learn R, an open-source (*i.e.*, free) programming language widely used among statisticians and data miners for developing statistical software and data analysis. I must stress that coding in R is a "must" for this course. If you do not like coding, this course is not for you.

### Grading

One midterm (October 26, **40%**). One final (December 21, **50%**). Assignments (**10%**).

### Required Reading

1. Heumann, Christian, Michael Schomaker, and Shalabh (2016), *Introduction to Statistics and Data Analysis: With Exercises, Solutions and Applications in R*, Springer.
2. Linton, Oliver (2017), *Probability, Statistics and Econometrics*, Academic Press.