Administration

Elena Moltchanova

STAT314/461-2021S1

Necessary prerequisites: Mathematics and Statistics.

- Basic probability theory. Conditional probability and total probability
- Random variable, probability distribution, probability density function (pdf), cumulative probability density function (cdf), expectation and variance, quantile
- Population parameters and sample statistics
- Basic algebra. Integration and differentiation
- log() and exp() functions
- Linear Regression

Necessary prerequisites: Programming in R.

- For a quick refresher check https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf
- Dealing with vectors, arrays, and binary logical variables.
- Implementing a loop.
- Basic random number generators and distribution functions (for example, `rnorm()`, `dnorm()`, `pnorm()`, and `qnorm()`)
- Remember to look up help files for any R packages and functions you come across. '?set.seed'

Recommended reading:

- R. McElreath (2016) Statistical Rethinking. A Bayesian Course with Examples in R and Stan.
- Gelman et al (2013) Bayesian Data Analysis, 3rd ed.
- S.B.McGrayne(2012) The Theory That Would Not Die: How Bayes' Rule Cracked the Enigma Code, Hunted Down Russian Submarines, and Emerged Triumphant from Two Centuries of Controversy.

Assessment:

- 5 labs (4 best out of 5): 40%
- Final exam (3h): 60%

400-level:

- 5 labs (4 best out of 5): 30%
- Final exam (3h): 45%
- A project report and oral presentation: 25%