Biostatistics Meet-and-greet

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Ege Ülgen

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Lecture Notes and Scripts

- Available on LMS and GitHub:

https://github.com/egeulgen/BB503_BB602_22_23

Syllabus

Week	Date	Subject	R	HW
1	2022-10-06	Exploratory Data Analysis		
2	2022-10-13	No lecture		
3	2022-10-20	Exploratory Data Analysis		
4	2022-10-27	Probability / Conditional Probability / Bayes Theorem		HW1
5	2022-11-03	Discrete Distributions		
6	2022-11-10	Continuous Distributions		
7	2022-11-17	MLE / LLN / CLT		
8	**2022-11-24**	**Midterm Exam**		
9	2022-12-01	Hypothesis tests I		
10	2022-12-08	Hypothesis tests II		
11	2022-12-15	Hypothesis tests III / Multiple testing correction		HW2
12	2022-12-22	Power Analysis / Missing data / Linear regression		
13	2022-12-29	Generalized Linear Models		
14	2023-01-05	Resampling Methods		HW3
15	2023-01-12	Review before final		
16	**2023-01-19**	**Final Exam**		

Course Evaluation

- Mid-term – 30%
- Final exam – 50%
- Homework – 20%

Reference Reading

- Sheldon Ross (2010) Introductory Statistics, Academic Press, 3rd edition

- Sheldon Ross (2012) A First Course in Probability, Pearson, 9th edition.

- Peter Daalgard (2008) Introductory Statistics with R, Springer Verlag, 2nd edition.

- Roger Peng (2016) R Programming for Data Science.
  - Buy it at any price at https://leanpub.com/rprogramming

Software

- R is a programming language and environment for **statistical computing** and **graphics**

- interactive data analysis

- high-level programming language

- **Packages** for almost everything:
  - Data processing and cleaning
  - Data visualization
  - Interactive web-apps
  - Machine learning routines
  - …

Installing R, RStudio

- Install R:
  https://cran.r-project.org/

- Install RStudio:
  https://www.rstudio.com/products/rstudio/download/

More Resources for learning R

- An Introduction to R
  Comprehensive introduction to base R. Go-to guide
  https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf

- RStudio Cheat Sheets
  Cheatsheets for numerous packages
  https://www.rstudio.com/resources/cheatsheets/

- R for Data Science
  Introduction to data analysis using using R, focused on tidyverse packages
  http://r4ds.had.co.nz/

- Data Visualization – A Practical Introduction
  Textbook on data visualization, using ggplot2
  http://socviz.co/