Schedule

**MF9130E: Introductory course in statistics**

Week 17 (April 25 – April 28) and week 29 (May 09 – May 12), 2022

**Teachers:**

Manuela Zucknick, Assoc. prof. (course leader), Department of Biostatistics, IMB.

Valeria Vitelli, Assoc. prof., Department of Biostatistics, IMB.

**Venues:**

This course will take place physically at Domus Medica, lecture halls: […]

**Exam:**

Take-home exam, which will be published via Inspera at the end of the course, to be

submitted within a specified deadline. A passed exam is required to get the course

approved.

**Literature:**

It is recommended to buy one of the following two books:

* Kirkwood BR & Sterne JAC: Essential medical statistics, 2nd ed. Blackwell, 2003.
* In Norwegian: Aalen OO et al: Statistiske metoder i medisin og helsefag. Gyldendal, 2006.

Participants might also consider the following book, which also covers the topics in

other PhD courses in statistics (chapters 1-5 & 11 are most relevant for this course):

* Veierød MB, Lydersen S, Laake P (eds.): Medical statistics in clinical and epidemiological research. Gyldendal akademisk, 2012 (www.medicalstatistics.no)

All exercises used in the course can be found in a separate exercise booklet,

available on Canvas.

***All Stata exercises will be performed on your own computers. There will be no supervision during the exercises, but there will be “lab summary” sessions in class, where we will go through the solutions together.***

**Programme:**

**Monday, April 25:**

08.30-09.00: Course registration. ***Location: Reception at Domus Medica (at main entrance)***

**Location: […], Domus Medica**

09.00-11.30: Data and descriptive statistics.

Literature: Aalen chap. 1 og 2, K&S chap. 2, 3 og 4

Lunch break

12.30-13.30: Stata exercise for descriptive statistics.

*(Stata exercises on your own laptops. You can choose to sit in the auditorium or elsewhere in the building. Computer lab […] Domus Medica for those who do not have a laptop.)*

13.30-14.30: Discussion of the Stata exercise in class.

14.45-16.00: Basic concepts of probability.

Literature: Aalen chap. 3.1-3.7, K&S chap. 14

**Tuesday, April 26:**

8.30-10.00: Bayes law. Sensitivity and specificity.

Literature: Aalen kap. 3.9 and 3.10, K&S chap. 33

10.15-10.45: Binomial distribution

Literature: Aalen chap. 4, K&S chap. 15

11.00-12.00: Exercise in class with discussion of results.

Lunch break

13.00-14.15: Normal distribution.

Literature: Aalen chap. 5, K&S chap. 5

14.30-15.45: Exercise in class with discussion of results.

**Wednesday, April 27:**

08.30-10.30: Introduction to hypothesis testing and confidence intervals. One-sample

Student’s t-test and confidence intervals.

Literature: Aalen chap. 8.1-8.5, K&S chap. 6, 8

10.45-11.30: Exercise in class with discussion of results.

Lunch break

12.30-14.00: Two sample t-test and confidence interval.

Literature: Aalen chap. 8.6 and 8.7, K&S chap. 7

14.15-15.15: Stata exercise for t-tests.

15.15-16.00: Discussion of the Stata exercise in class.

**Thursday, April 28:**

08.30-10.30: Analysis of proportions. [Zoom]

Literature: Aalen chap. 6.1-6.4, K&S chap. 15, 16

10.45-11.45: Exercises in class with discussion of results. [Zoom]

Lunch break

12.45-14.15: Analyzing tables: chi-squared and exact tests. [Recordings, ca 1 h 30 total]

Literature: Aalen chap. 6.5, K&S chap. 17

14.30-15.30: Stata exercise for the analysis of tables.

15.30-16.00: Discussion of the Stata exercise in class. [Zoom]

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Exercises for the intervening period:**

You should read through the material from the first period and do the following

exercises: 8, 10 and 11 in the exercise booklet before Monday, May 09th.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Monday, May 09:**

08.30-09.15: Discussion of the exercises from the intervening period.

09.30-11.00: Transformations. Non-parametric methods.

Literature: Aalen chap. 8.8, K&S chap. 13, 30

11.15-12.15: Stata exercise for non-parametric methods.

Lunch break

13.00-13.30: Discussion of the Stata exercise in class.

13.30-15.00: Regression analysis I: Simple regression, correlation.

Literature: Aalen chap. 11.1-11.3, K&S chap. 10

15.15-16.00: Stata exercise for regression I.

**Tuesday, May 10:**

08.30-09.15: Discussion of the Stata exercise for regression I in class.

09.30-11.00: Regression analysis II: Dummy variables, confounding, multiple

regression.

Literature: Aalen chap. 11.4-11.6, K&S chap. 11 and 12.

11.15-12.00: Stata exercise for regression II.

Lunch break

13.00-14.00: Regression analysis III: Multiple regression (continued), interactions.

Literature: Aalen chap. 11.4-11.6, K&S chap. 11 and 12.

14.15-15.00: Stata exercise for regression III.

15.15-16.00: Discussion of the Stata exercises for regression II-III in class.

**Wednesday, May 11:**

08.30-10.00: Logistic regression.

Literature: Aalen chap. 12, K&S chap. 19 and 20

10.15-11.15: Stata exercise for logistic regression.

11.15-11.45: Discussion of the Stata exercise in class.

Lunch break

12.45-14.15: Sample size and power.

Literature: Aalen chap. 9.6, K&S chap. 35

14.30-16.00: Exercises in class with discussion of results.

**Thursday, May 12:**

08.30-11.00: Epidemiological design and basic concepts. Principles for organizing

clinical trials.

Literature: Aalen chap. 10, K&S chap. 34

Lunch break

12.00-13.30: Survival analysis.

Literature: Aalen chap. 13, K&S chap. 26

13.45-15.00: Stata exercise for survival analysis.

15.00-15.30: Discussion of the Stata exercise in class.

15.30-16.00: Course summary and introduction to the take-home exam.