

Schedule

MF9130E: Introductory course in statistics

May 29 – June 2 and June 6 – June 9, 2017

Teachers:

Manuela Zucknick, Assoc. prof. (course leader), Department of Biostatistics, IMB.
Alvaro Köhn-Luque, Post doc, Department of Biostatistics, IMB.
Richard Xiaoran Lai, PhD candidate, Department of Biostatistics, IMB.

Venues:

29.5. [Nye auditorium 13, Domus Medica \(preklinisk I og II\), Sognsvannveien 9](#)
30.5. [Rødt Aud 2, Rikshospitalet B, Sognsvannsveien 20](#)
31.5. and 1.6. [Runde auditorium R-105, Domus Medica tilbygg, Sognsvannsveien 9](#)
6.6. [Auditorium A1.1001, Domus Odontologica, Sognsvannsveien 10](#)
7.6. and 9.6. [Runde auditorium R-105, Domus Medica tilbygg, Sognsvannsveien 9](#)
8.6. [Nye auditorium 13, Domus Medica \(preklinisk I og II\), Sognsvannveien 9](#)

Exam:

Take-home exam, which will be published on Fronter 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 Fronter.

All SPSS exercises will be performed on your own laptops. You can choose to sit in the auditorium or in casual groups elsewhere in the building. A computer lab is available for those who do not have their own laptop with SPSS (PC room R-211 in Domus Medica on top of Runde Auditorium on most days, exceptions are noted below). 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, May 29:

08.30-09.00: Course registration. **Location: Reception at DM (by the main entrance)**

Auditorium: Nye auditorium 13, Domus Medica

09.00-11.30: Data and descriptive statistics (Zucknick).

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

11.30-12.15: Lunch

12.15-13.15: SPSS exercise for descriptive statistics.

(SPSS exercises on your own laptops. You can choose to sit in the auditorium or elsewhere in the building. Computer lab for those who do not have a laptop: PC room R-211.)

13.15-14.00: Discussion of the SPSS exercise in class (Zucknick).

14.15-15.45: Basic concepts of probability (Zucknick).

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

Tuesday, May 30:

Auditorium: Rødt Auditorium 2, Rikshospitalet B

08.30-10.00: Bayes law. Sensitivity and specificity (Köhn-Luque).

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

10.15-10.45: Binomial distribution (Köhn-Luque).

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

11.00-12.00: Exercise in class with discussion of results (Köhn-Luque).

12.00-12.45: Lunch

12.45-14.00: Normal distribution (Köhn-Luque).

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

14.15-15.30: Exercise in class with discussion of results (Köhn-Luque).

Wednesday, May 31:

Auditorium: Runde auditorium R-105, Domus Medica

08.30-10.30: Introduction to hypothesis testing and confidence intervals. One-sample Student's t-test and confidence intervals. (Zucknick).

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

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

11.30-12.30: Lunch

12.30-14.00: Two sample Student's t-test and confidence interval (Zucknick).

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

14.15-15.15: SPSS exercise for t-tests.

(Computer lab for those who do not have a laptop: PC room R-211)

15.30-16.00: Discussion of the SPSS exercise in class (Zucknick).

Thursday, June 1:

Auditorium: Runde auditorium R-105, Domus Medica

08.30-10.30: Analysis of proportions (Zucknick).

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

10.45-11.45: Exercises in class with discussion of results (Zucknick).

12.00-13.00: Lunch

13.00-14.30: Analyzing tables: chi-squared and exact tests (Zucknick).

Literature: Aalen chap. 6.5, K&S chap. 17
14.30-15.15: SPSS exercise for the analysis of tables.
(*Computer lab for those who do not have a laptop: PC room R-211*)
15.30-16.00: Discussion of the SPSS exercise in class (Zucknick).

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 until Tuesday, June 6.

Tuesday, June 6:

Auditorium: Auditorium A1.1001, Domus Odontologica

08.30-09.15: Joint discussion of the exercises from the intervening period (N.N.)
09.30-11.00: Transformations. Non-parametric methods (Köhn-Luque).
Literature: Aalen chap. 8.8, K&S chap. 13, 30
11.15-12.15: SPSS exercise for non-parametric methods.
(*Computer lab for those who do not have a laptop: PC room R-211*)
12.15-13.00: Lunch
13.00-13.30: Discussion of the SPSS exercise in class (Köhn-Luque).
13.30-15.00: Regression analysis, correlation (Köhn-Luque).
Literature: Aalen chap. 11.1-11.3, K&S chap. 10
15.15-16.00: SPSS exercise for regression I.
(*Computer lab for those who do not have a laptop: PC room R-211*)

Wednesday, June 7:

Auditorium: Runde auditorium R-105, Domus Medica

08.30-09.15: Discussion of the SPSS exercise in class (N.N.).
09.30-11.30: Regression analysis. Dummy variables, confounding, multiple regression (Köhn-Luque).
Literature: Aalen chap. 11.4-11.6, K&S chap. 11 and 12.
11.30-12.30: Lunch
12.30-13.15: SPSS exercise for regression II.
(*Computer lab for those who do not have a laptop PC room R-211*)
13.30-14.00: Discussion of the SPSS exercise in class (Köhn-Luque).
14.00-14.30: Multiple regression continued, Interactions (Köhn-Luque).
Literature: K&S kap 11, 12
14.45-15.30: SPSS exercise for regression III.
(*Computer lab for those who do not have a laptop: PC room R-211*)
15.30-16.00: Discussion of the SPSS exercise in class (Köhn-Luque).

Thursday, June 8:

Auditorium: Nye auditorium 13, Domus Medica

08.30-10.45: Logistic regression (Zucknick).
Literature: Aalen chap. 12, K&S chap. 19 and 20
11.00-12.15: Sample size and power (Zucknick).
Literature: Aalen chap. 9.6, K&S chap. 35

12.15-13.00: Lunch

13.00-14.00: Exercises in class with discussion of results (Lai).

14.15-15.15: SPSS exercise for logistic regression.

(Computer lab for those who do not have a laptop: PC room R-211)

15.30-16.00: Discussion of the SPSS exercise in class (Lai).

Friday, June 9:

Auditorium: Runde auditorium R-105, Domus Medica

08.30-11.30: Epidemiologic design and basic concepts. Principles for organizing clinical trials. (Zucknick).

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

11.30-12.30: Lunch

12.30-14.00: Survival analysis (Zucknick).

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

14.15-15.30: SPSS exercise for survival analysis.

(Computer lab for those who do not have a laptop: A1.1022 at Domus Odontologica)

15.30-16.00: Discussion of the SPSS exercise in class (Zucknick).