STOCKHOLM UNIVERSITY
Department of Statistics
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Ulf Högnäs
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Reading instructions for
Basic Statistics for Economists, 15 ECTS, STE101

COURSE LITERATURE AND OTHER TEACHING MATERIALS

NCT = Newbold, P., Carlson, W. L. and Thorne, B. (2012). *Statistics for Business and Economics with MyMathLab Global XL*. 8th ed. Global edition. Prentice Hall, NJ.

JB = Bethlehem, J. (2009). *Applied survey methods – a statistical perspective*. 1st ed. Hoboken, N.J.: Wiley & Sons.

EX = Plenary exercise booklet for the course, can be found on Mondo

NOTE: You can download JB for free via Stockholm University's library, use the link (http://su.se/english/library/) and search for the title or author.

Additional course material such as lecture notes, practice exams, instruction, etc. will be uploaded onto Mondo during the course. Mondo is accessed via the link https://mondo.su.se/portal.

- The lectures will focus on the material in the **NCT** course book, which covers basic statistical theory, regression and time series analysis in chapters 1-14, and 16.

- The **JB** course book covers survey methodology, and especially chapters 4.1 and 5.1-2 will be discussed in some detail during lecture 11 (L11). Although some of the subject matter in JB is covered during the lectures, students are expected to read other relevant sections on their own. Recommended sections in JB are

  1.1–1.2; (1.3); 2.1–2.5; 3.1–3.6; 4.1; (4.2); 5.1–5.2.2; 7.1–7.4; 8.1–8.2; 9.1; (9.2).

  NOTE: When reading JB, you should concentrate more on concepts and less on the mathematical technicalities and formulae; these aspects will instead be covered during L11

  There is a website for the JB course book where e.g. solutions to the book's exercises are available, see http://www.applied-survey-methods.com/index.html.

LECTURES (L) AND PLENARY EXERCISES (P)

For information regarding dates, times and location see the current schedule, (link).

The reading list below may be changed during the duration of the course. Note that attendance at the first lecture is not mandatory but highly recommended (see the Course description).

	Content	**Readings**
L1	INTRODUCTION: Course information. What is statistics? Some basic definitions about survey studies. Variable classification.	NCT: chap 1.1-2
L2	DESCRIPTIVE STATISTICS: Describe data. Central tendency and dispersion measures.	NCT: chap 1-2, 16.1
L3	DESCRIPTIVE STATISTICS: Multivariate data. Covariance and correlation. PROBABILITY THEORY: Definitions of various concepts in probability. What is probability?	NCT: chap 1-2, NCT: chap 3.1-2
L4	PROBABILITY THEORY: Rules in probability. Conditional probability. Bayes theorem.	NCT: chap 3.3-5
L5	STOCHASTIC VARIABLES: Discrete probability distribution, Bernoulli experiments and the Binomial Distribution.	NCT: chap 4.1-4
PE1	PLENARY EXERCISE 1	EX section 1
L6	STOCHASTIC VARIABLES: Continuous probability distributions. The Normal Distribution.	NCT: chap 5.1-4
L7	OTHER VARIABLES: Joint probability distributions.	NCT: Chap 4.7, 5.6
L8	SAMPLING THEORY: Sampling distributions. The Central Limit Theorem.	NCT: chap 6.1-3
PE2	EXERCISES	EX section 2
L9	INFERENCE: Estimation. Point estimation. Interval estimation.	NCT: chap 7.1-3
PE3	EXERCISES	EX section 3
L10	INFERENCE: Confidence intervals for a proportion and difference between two population means.	NCT: chap 7.4,8.1-3
L11	SAMPLING METHODS: Finite populations. Simple random sample. Stratified, systematic and group samples.	JB: chap 4-5 (NCT: chap 17)
PE4	EXERCISES	EX section 4
L12	INFERENCE: The concept of hypothesis testing. Hypothesis testing for means and proportions.	NCT: chap 9.1-4
L13	INFERENCE: p-values. The connection between hypothesis tests and confidence intervals. Compare two means, and two proportion.	NCT: chap 9.2, 9.5, 10.1-3, 10.5
PE5	EXERCISES	EX section 5
L14	REGRESSION ANALYSIS: The equation of the straight line. The least squares method. Residuals. ANOVA tables. Simple linear regression. Parameter estimation.	NCT: chap 11.1-3
L15	REGRESSION ANALYSIS: Simple linear regression continuous. Confidence intervals and hypothesis tests. Prediction.	NCT: chap 11.4-6
L16	REGRESSION ANALYSIS: Multiple linear regression. Confidence intervals and hypothesis tests. Prediction.	NCT: chap 12.1-4, 12.5, 12.6

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L17	REGRESSION ANALYSIS: Multiple linear regression (cont.). Dummy variables. Model specification. Additional topics.	NCT: chap 12.8-9, 13.1, 13.4-6
L18	χ^2-METHOD: Goodness of fit. Test for independence with contingency tables.	NCT: chap 14.1-3
PE6	EXERCISES	EX section 6
L19	TIME SERIES AND FORECASTS: Components in time series. Moving average. Seasonal adjustment.	NCT: 16.1-2
L20	TIME SERIES AND FORECASTS: Exponential smoothing.	NCT: 16.3
PE7	EXERCISES	EX section 7
L21-23	REPITITION: Course summary and going through old exams.	

SEMINARS (S) AND COMPUTER EXERCISES (D)

For information regarding dates, times and location see the current schedule, (link).

Attendance at S1 and S6 is compulsory; contact your seminar teacher if you are unable to attend.

	Content	**Exercises**
S1	Introduction. Student allocation into working groups. Descriptive statistics.	NCT Chap 1-2
CL1	Computer Exercises. Intro to home assignment 1, Data for Decisions.	Instructions on Mondo.
S2	Probability theory. Discrete random variables.	NCT Chap 3-4
S3	Continuous random variables. Sampling distributions.	NCT Chap 5-6
S4	Recap	NCT Chap 1-6
S5	Inference. Estimation. Confidence intervals.	NCT Chap 7-8
S6	Oral presentations of Assignment 2A, Market Surveys.	-
CL2	Computer Exercises. Intro to Assignment 3, Econometrics.	Instructions on Mondo.
S7	Inference. Hypothesis tests.	NCT Chap 9-10
S8	Regression analysis continued.	NCT Chap 11-13
S9	χ^2-tests. Recap.	NCT Chap 14. Chap 7-14.

Exercises from NCT for each chapter are listed on the following page. A selection of these will be addressed during the corresponding seminar.

Students are expected to attempt to work through the problems *before* each seminar. Exactly which exercises each seminar group goes through can vary between groups. Students can also have a say in the selection of exercises and topic of the seminars. Speak with your seminar teacher, preferably before the seminar, so he/she is given some time to adjust and prepare.

Exercises NCT

The following is a list of exercises from the NCT course book. Solutions to these problems will be posted on Mondo at appropriate times during the course.

NCT:	Ch. 1:	1, 2, 3, 5, 34, 47, 52, 60, 64	Ch. 9:	1, 2, 8a, 11, 15ac, 22, 24, 27, 28, 29a, 30, 32, 35, 39
	Ch. 2:	3, 4, 13, 20, 21a-b, 30, 36, 37, 40, 49, 50	Ch. 10:	3, 6, 8, 16, 20
	Ch. 3:	2, 3, 9, 10, 12, 17, 19, 20, 22, 23, 28, 40, 48, 79, 114	Ch. 11:	1, 2, 8, 18, 20, 21, 25a, 32a, 35, 40
	Ch. 4:	10, 11, 13, 16, 22, 26, 34, 35, 72, 78	Ch. 12:	2, 5, 8, 17, 20, 24, 25, 28, 47, 65, 69abd, 70, 96, 97, 98
	Ch. 5:	10, 17a-d+f, 20, 26, 28, 32, 40, 44, 45cd	Ch. 13:	4
	Ch. 6:	2, 6, 10, 14, 20, 26, 30, 42	Ch. 14:	2, 4, 6, 8, 18, 21, 52, 56, 62
	Ch. 7:	3, 12, 15, 26, 27, 30, 34	Ch. 16:	1, 6, 10, 13, 19
	Ch. 8:	2, 5, 6, 10, 18, 20		

Exercises JB (to do on you own)

The following is a list of exercises from the JB course book. The exercises focus mainly on concepts rather than formulas, the purpose being that they provide some guidance for identifying issues relevant to Assignment 2 Market surveys, especially part A of the assignment.

Although solutions are available on the book's website, http://www.applied-survey-methods.com/index.html, you should attempt to answer them by reading the corresponding chapters first.

JB:	Ch. 1:	1, 3, 4	Ch. 4:	2, 3a	Ch. 8:	1, 2, 4
	Ch. 2:	2, 3, 4	Ch. 5:	3, 5a	Ch. 9:	9.1
	Ch. 3:	1, 2, 4, 5, 6	Ch. 7:	1, 2, 3		