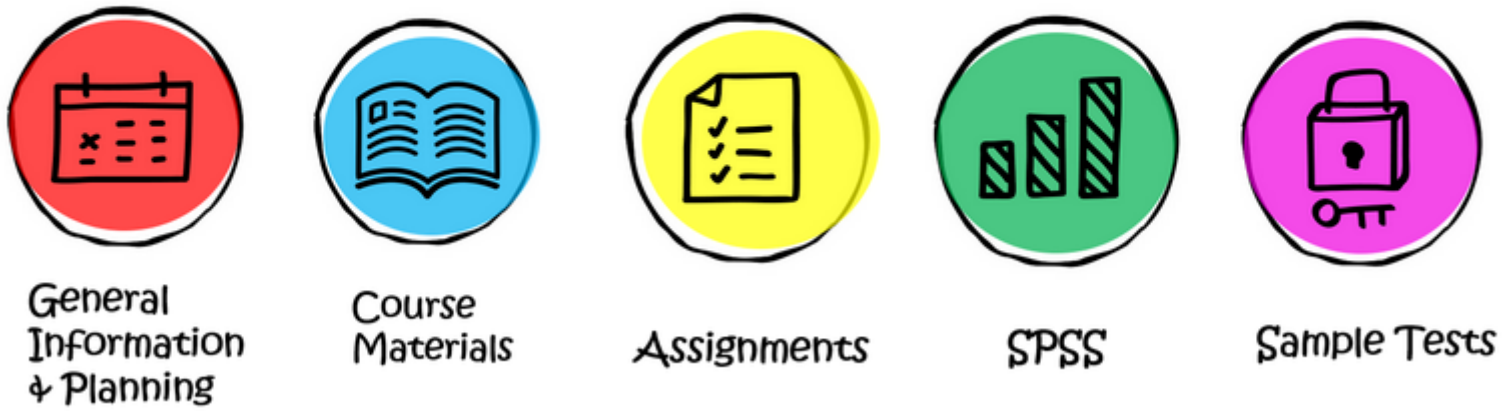
Statistical Techniques for CS/BIT

[Stat] Home Page



Today:

- Introduce the course
- Meet your teachers (online)
- Statistical Techniques
  Chapter 1 (1.1)
- Break
- Statistical Techniques
  Chapter 1 (1.2, 1.3)

This course aims to introduce the basic topics in statistics:

Descriptive statistics,
Estimation (theory),
Confidence intervals and
Testing of hypotheses.

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  Chapter 1
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  Chapter 1 (cont'd)

Aims and Objectives

Clarified learning goals are as follows:

At the end of the course the student is able to:

- Recall and explain basic terminology and concepts of statistics: Define standard descriptive statistics, recognize common parametric distributions, explain concepts such as random samples, estimation, confidence intervals, hypothesis testing, p-value and power of a test.
- Analyze a data set: Summarize and represent characteristics of the data using descriptive statistics, judge whether the given data set is well-modeled by a normal distribution, or another parametric distribution. Identify outliers and extreme observations in the data.
- Apply elementary statistical techniques (see 'content description' for the list): Choose an appropriate technique for a given problem, judge whether the assumptions of the model are satisfied, work out the necessary computations to obtain (correct) numerical results.
- Interpret the output of a statistical procedure (see 'content description' for the list): Translate the output of the model into an answer to the original problem, explain the results and quantify the uncertainty attached to these.
- Use statistical software: Input and manipulate data in SPSS, apply statistical methods in SPSS, interpret the output of statistical software.
- Apply cognitive skills: Describe quantities and events using random variables, communicate in a clear way ideas and solutions to a problem, be critical about his/her own solutions as well as others', and identify when an answer is either impossible or extremely unlikely.

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[Stat] Sample Tests

Sample Tests:

Sample tests are sources to give you an idea about the exam:

Sample test 1

Sample test 1 solutions

Sample test 2

Sample test 2 will be discussed during the last week (see the planning)

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  Chapter 1 (cont'd)

Planning

Week-year	Meeting number	Date	Day	Meeting type	Before the meeting	Location	During the meeting
					Read		Content
46	1	16/11	Tue	Lecture (2hrs)	Ch 1.1, 1.2, 1.3	WA1	Ch1 Descriptive Statistics (1.1, 1.2, 1.3)
	2	17/11	Wed	Tutorial		online	
	3	18/11	Thu	Lecture (2hrs)	Ch 1 (1.4, 1.5) + Ch 2	WA1	Ch 1 (1.4, 1.5) + Ch 2 Estimation (2.1, 2.2, 2.3)
47	4	23/11	Tue	Lectorial	Ch 3 (3.1, 3.2)	WA1	Ch 3 (3.1, 3.2)
	5	24/11	Wed	Tutorial	Ch1 & Ch2	online	
	6	25/11	Thu	Lectorial	Ch 3 (3.4, 3.3)	HR C101	Ch 3 Confidence intervals (3.4, 3.3)
	7	26/11	Fri	Lectorial	Ch 4 (4.1)	HR C101	Ch 4 Hypothesis tests (4.1)
48	8	30/11	Tue	Lectorial	Ch 4 (4.2)	WA1	Ch 4 Hypothesis tests (4.2)
	9	01/12	Wed	Tutorial		online	
	10	02/12	Thu	Lectorial	Ch 4 (4.3, 4.4)	WA1	Ch 4 Hypothesis tests (4.3, 4.4)
	11	03/12	Fri	Lectorial	Ch 5 (5.1, 5.2)	WA1	Ch 5 Two sample problems (5.1, 5.2)
49	12	07/12	Tue	Lectorial	Ch 5 (5.3, 5.4)	WA1	Ch 5 Two sample problems (5.3, 5.4)
	13	08/12	Wed	Tutorial		online	
	14	09/12	Thu	Lectorial	Ch 6 (6.1)	WA1	Ch 6 Chi-square tests (6.1)
	15	10/12	Fri	Lectorial	Ch 6 (6.2)	WA1	Ch 6 Chi-square tests (6.2)
50	16	14/12	Tue	Lectorial	Ch 7 (7.1, 7.2, 7.3)	WA1	Ch 7 Choice of model & Non-par. (7.1, 7.2, 7.3)
	17	15/12	Wed	Lectorial	Ch 7 (7.4, 7.5)	WA1	Ch 7 (7.4, 7.5)
	18	15/12	Wed	Tutorial		online	
	19	16/12	Thu	Lectorial		WA1	Choice of model
51	20	21/12	Tue	Lectorial		WA1	Exam preparation (sample test solution)
	21	22/12	Wed	Q&A		WA1	Q&A before the exam
		23/12	Thu	Exam Therm 1 & 2 (Students with extra time), TL 2275, TL3130, TL3330 (Check timetable for possible changes)			
				Resit (Wed, February 03rd 2022, 13:45 – 16:00)			

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Types of Meetings

We have lectures, tutorials and lectorials. Here is what we mean with them:

Lecture: We have 2hrs lectures in the first week

Lectorial: Lectorials follow from the second week on. These consist of one hour lecture which is followed by one hour tutorial. The first hour (lecture hour) will be streamed and recorded. The tutorial hours are reserved for individual work on the exercises of the week with available teacher support.

Tutorial: The tutorial hours are for working on the individual questions and class discussions where necessary.

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[Stat] Course Materials

Reader

Reader: 'Statistics for Engineers' is available at the Union Shop (no. 444). The reader will not be published in the digital form.

Lecture Slides & Recordings

The lecture slides and the recorded lectures takes place here.

Assessment

Your grade on this course is based on (i) a written test about the contents of the reader,lectures, and tutorial exercises and (ii) four individual homework assignments.

I. The written test is in week 6 of the module. The resit of this test is in week 10 of the module.

II. The four homework assignments are to be handed in at the end of weeks 2, 3, 4 and 5 of the module. These test both the applications of statistical concepts (optional) and procedures and the correct application of the use of SPSS (mandatory). Therefore, the homework assignments will be graded in two senses:

1. (mandatory) for the use of SPSS: Sufficient (+, pass) or Insufficient (-, obligatory repair before the test) and
2. (optional) for the applications of statistical concepts and procedures a grade is assigned.

Each grade of the homework assignment that is higher than the written test grade counts for 5% in the final result. (Homework assignment graded lower than the test does not count).

For example: if your homework assignments are graded as 4, 6, 9, 9 and you score 5.4 (out of 10) for the written test, then your grade for Statistical Techniques is computed as follows: $0.05*6+0.10*9+0.85*5.4=5.8$

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[Stat] Assignments

Homework Assignments

Your homework assignments are announced via this page in due time:

Homework Assignment 1

- Part 1 (Optional)

  Solutions to HWA 1 - Part 1
- Part 2 (SPSS- **Mandatory**)

Homework Assignment 2

- HMW Assignment 2

  Solutions to HWA 2

Homework Assignment 3

- HMW Assignment 3

  Solutions to HWA 3

Homework Assignment 4

- Part 1 (Optional)

  Solutions to HWA 4 - Part 1
- Part 2 (SPSS- **Mandatory**)

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Homework Assignmen

- HMW Assignment 2

  Solutions to HWA 2

Homework Assignmen

- HMW Assignment 3

  Solutions to HWA 3

Homework Assignmen

- Part 1 (Optional)

  Solutions to HWA 4 - Part
- Part 2 (SPSS- **Mandatory**)

[Stat] SPSS

SPSS

SPSS: Statistical Package for the Social Sciences

You will be tested to use the correct applications and provide the right output with SPSS. We will assess this within the Homework Assignments 1 and 4.

SPSS Installation

Note: You must be on campus or connected to the University's VPN to make use of SPSS.

Below you can find information on how to install SPSS and configure a VPN.

- SPSS can be downloaded from the NSC-software site:

https://www.nsc.utwente.nl/software/

- Simply search for "SPSS", choose whichever version you want (newest is 26) and click on "View". You are redirected to a page with 3 tabs: "General information", "Downloads", and "Manuals". Make sure to follow the instructions in the manuals carefully.
- Information on setting a VPN connection can be found here:

https://www.utwente.nl/en/service-portal/hardware-software-network/network-eduroam-vpn-etc

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