Homework 1, 6 points

November 3, 2011

1 Instruction

- **Deadline:** 11th, November, 2011
- Hand in personal or to Room 758
- The home assignments shall be solved individually. The home assignment is not compulsory.
- Write your solutions by hand - not by using a computer. Show your calculations.
- Solutions will be graded, and may give points that are added to the result of the written examination, as described in the course description. The points from the home assignments can only be added to the results of the written examinations in December,2011 and February, 2012. The points cannot be added to results from examinations written at later points of time. Home assignments that are handed in too late (i.e. after 11 November) give 0 points. It is not possible to get extra points by completing or correcting solutions after the deadline.

2 Problem 1

Explain the idea of ANOVA.

3 Problem 2

A product developer is investigating the tensile strength of a new synthetic fiber that will be used to make cloth for men's shirt. Strength is usually affected by the percentage of cotton used in the blend of material for the fiber. The engineer conducts a completely randomized experiment with five levels of cotton content and relocates wtih experiment five times. The data are shown in the following table,

Cotton weight percent	observations				
15	7	7	15	11	9
20	12	17	12	18	18
25	14	19	19	18	18
30	19	25	22	19	23
35	7	10	11	15	11

1. Is there evidence to support the claim that cotton content affects the mean tensile strength? Use $\alpha = 0.05$.

2. Use the Fisher LSD method and Tukey's test to make comparisons between the pairs of means. What conclusions can you draw? Which test you prefer?

3. Reconsider the experiment description. Suppose that 30 percent cotton content is a control. Use Dunnett's test with $\alpha = 0.05$ to compare all of the other means with the control.