

# Homework 4, 6 points

December 7, 2011

## Instruction

- **Deadline:** 20th, December, 2011
- Hand in personal or to Room 758 or by email
- The home assignments shall be solved **individually**. The home assignment is not compulsory.
- 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.

## Problem 1

Construct a  $2^{6-3}_{III}$  design. Determine the effects that may be estimated if a full fold over of this design is performed.

## Problem 2

Prove one simplex design is an orthogonal first-order design.

## Problem 3

Consider the design in the following table.

A	B	C	D	E
1	1	1	1	1
1	1	-1	1	-1
1	-1	1	-1	1
1	-1	-1	-1	-1
-1	1	1	-1	-1
-1	1	-1	-1	1
-1	-1	1	1	-1
-1	-1	-1	1	1

1. What is the resolution of this design? Justify your answer.
2. Write out the alias structure for this design.
3. The results obtained are  $a = 4, bc = 1, be = 1, cd = 6, de = 4, ace = 5, abd = 2, abcde = 3$ . Calculate the sums of squares  $SS_A$  and  $SS_B$ .