521 M7410 –Adjustment and Analysis of Spatial Information

Fall Semester 2015

Homework No. 8

handed out Thursday, December 18, 2015
due Thursday, December 24, 2015, 09:10 **Name:** _____

Unified LSQ Adjustment

1. Repeat Homework No. 7 (cases I and II), but now using the following two LSQ techniques:

   A. Case I: A unified LSQ.
   B. Case II: A unified LSQ with constraints.

   Assumptions:

   For each of the above, assume σ_s (standard deviation of distance measurements) are all equal to 0.02. Coordinates of the known point A are errorless. Coordinates of the known points B and C are of equal precision ($\sigma_{x_B} = \sigma_{y_B} = \sigma_{x_C} = \sigma_{y_C} = 0.01$) and uncorrelated.

   Ask:

   1) Compute the estimated coordinates of points D and E and their corresponding cofactor matrix for cases I and II.
   2) Compare the results against those you have obtained in Homework No.7.

Your (individual) final report should contain (use A4 papers):

- this page as the cover sheet
- source code(s) and outputs; do not forget to add your name and lots of comment cards to the source listing (% .....)
- input and output files from program [input/output values used and calculated], if any
- plots, including captions on axes, title, your name, LB#/HM#, course title, date (if any)
- derivation and description of formulas used, accompanied by figures where applicable
- evidence of computational accuracy
- discussion of results