

MATH 483/593 : Multivariate Statistical Analysis, Spring 07

Midterm II (take-home due on Monday, April 9 in class)

**Note: Your report must be brief, concise, and easy to read. Include only discussed parts of the SAS output. Attach your SAS code as an appendix. The code and output must be well labeled.**

1. (30pt) Consider the air-pollution data is posted on the class web (*source App. Mult. Stat. Ana., Johnson and Wichern*). 42 measurements on air-pollution variables were recorded at noon in the LA area on different days. There are seven variables in the data, defined as follows:

$x_1$	Wind
$x_2$	Solar radiation
$x_3$	CO
$x_4$	NO
$x_5$	NO <sub>2</sub>
$x_6$	O <sub>3</sub>
$x_7$	HC

Perform a complete factor analysis. Your analysis and discussion should include (but not limited) a preliminary analysis via covariance or correlation matrix, a choice of the number of factors and a chi-square test for the adequacy, interpretation of the rotated and un-rotated factor loadings with plots, comparison of your findings with the preliminary analysis, interpretation of the communality and specific variance, scatter plots of factor scores and discussion on possible outliers and groups, and further discussions.

2. (20pt) Text exercise 5.11
3. (20pt) Text exercise 6.1