

GIRTON SUMMER PROGRAMME

MATHEMATICS FOR ENGINEERING

DATA: HOMEWORK QUESTIONS

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The excel spreadsheet for Data-2 can be found on the Moodle Website.

The Homework Answers sheet can be downloaded from Moodle. Once completed (for all five homeworks) is must be uploaded as a “.pdf”.

Question: Data-1

Find the best estimates for the mean and standard deviation of the five numbers:

0.64

3.88

0.83

2.52

4.53

Enter your estimates for mean and standard deviation on the **Homework Answers sheet**.

Question: Data-2

A quantity $Q(t)$ has been measured at time intervals of 0.1 s for approximately 2 minutes (1201 samples) and the values are in the Excel spreadsheet (available on Moodle):

“DataAnalysis_RawData_v03.xls”

By use of an autocorrelation of the data, estimate the time-scale of the quantity $Q(t)$. Suggest the number samples that ought to be used and the time delay between successive samples when acquiring more data to achieve a standard deviation of the sample average to be less than 0.03% of the mean value.

Enter the time-scale and number of points on the **Homework Answers sheet**.