# Course Lab 1

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## 1 Chapter1

## 2 Conclusion

Write your conclusion here.
This is in Thesis

## 3 Chapter 2

This is in thesis

## 4 Linear Kalman Filter

What is the difference between a 'control' ut, a 'measurement' zt and the state xt? Give examples of each?
The control $u_t$ is the input to the system, usually defined by e.g. the user such as the desired speed of a vehicle, the measurement $z_t$ is the output of the system, the measured or measurable quantities such as the speed of the vehicle and $x_t$ are the states of the system, which can be the same as the $z_t$ or as in the temperature example the temperatures of the rooms and the outdoors. The change in the magnitude of the belief uncertainty depends on the $A_t\Sigma_{t-1}A_t^T$ term, if it is small the term may decrease otherwise it may increase.

## 5 Extended Kalman Filter

### 5.1 •

How does the extended Kalman filter relate to the Kalman filter?
The EKF includes possible non-linearities in its model applying a linearisation for the innovation.