

# THE KALMAN FILTER PARAMETER ESTIMATION

*This training is open to engineers, researchers, technicians and students who wish to become initiated to the Kalman filtering or improve their knowledge on the subject. Many problems consist in estimating or predicting the state of a dynamical system from noisy experimental data. The Kalman filtering is a technique commonly used to estimate the state but also the mathematical model parameters representing the phenomenon studied and to quantify the present uncertainties. Its application areas are quite diversified: signal processing, physics, biology, meteorology, robotics, ...*

## KNOWLEDGE REQUIRED

background in mathematics corresponding to a bachelor level.

- Extended Kalman filter (nonlinear cases).
- State, parameter and uncertainty estimation examples.

## OBJECTIVES

Get a good knowledge of the linear discrete Kalman filter and extended Kalman filter.

Course Supervisor

**Léa Cot**

Associate-Professor

INSA - Institut de Mathématiques de Toulouse

Member of the group Dependability & Reliability  
Midi- Pyrénées

Teaching of applied mathematics and signal processing

## PROGRAM

Pedagogical Approach :lessons using theoretical concepts with examples.

Practical work :

- Course Application
- MATLAB Programming

### Theoretical courses

- Filtering introduction
- Background of probability
- Gaussian linear systems
- Kalman-Bucy filter
- Linearized Kalman filter
- Extended Kalman filter

### Practical work

- Modeling and implementation of the Kalman filter in linear cases.
- Modeling and implementation of the

INEOS

📅 from the 12th to 14th march  
2018 or

📅 from the 14th to 16th may  
2018

Duration :  
3 days - 20 hours

👉 Cost : 1500 €

Lunches and educational  
material included

Practical informations and registration:

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