# **METTI5** Tutorial T7 on

## "Real data identification of an actual radiator-room system aimed to virtual sensor design"

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#### Duration

1 h 30

## Туре

Numerical / (Experimental, in the sense that actual acquired data are made available to students)

## Content

The tutorial deals with both theoretical issues and practical hints on data analysis and processing, in order to identify linear and affine mathematical models, using standard techniques implemented by Matlab/Scilab tools. Actual acquired thermal and hydraulic data are made available to students to work out the proposed identification problem and to test the algorithms. Tutorial details are as follows. Firstly, the radiator-room system is described and the thermal model identification problem is stated, aimed to design a Virtual Sensor. Then, inputs (commands/disturbances) and outputs (measured/estimated) are defined together with the model typologies (transfer matrix/state space equations; linear/affine). Some practical suggestions on data preprocessing (detrend, scaling, etc.) are also pointed out. To conclude, the obtained models are shown and compared to evaluate their suitability in describing the plant behavior. Eventually, some notes on Virtual Sensor design are also given.