

## **SHORT COURSE EuCAP 2014, The Hague, THE NETHERLANDS**

### **Course Title: Propagation and channel modelling for beyond 4G cellular networks**

This short course aims at providing PhD students and engineers working in the field of wireless communications the latest results in cell planning and channel modeling for emerging and beyond 4G networks, including important concepts such as small cells, femto-cells and multi-cell MIMO.

In a first part, we will highlight the challenges in future radio planning and optimization and how femtocell design requires updated propagation models.

In a second part, we will detail recent results in multi-user multi-cell channel measurements and what we can learn from them in terms of channel modeling. In particular, new multi-dimensional channel models such as WINNER II and COST 2100 will be presented.

**Requested pre-requisites:** MS level courses in radio propagation and wireless communications.

### **List of chapters:**

1. Introduction to beyond 4G communication networks
2. Challenges in radio network planning and optimization
3. Propagation models for small cells and femto cells
4. Multi-link channel sounding: techniques, challenges and experimental results
5. Reference and standardized 4G channel models