Name of the course: Lightning events and Interaction with Overhead Distribution Systems

Teachers: Daniele Mestriner, Massimo Brignone (daniele.mestriner@unige.it, massimo.brignone@unige.it)

Duration of the course: 12 hours

Credits: 3

Language: Italian; in the presence of a request by foreign students, the course will be held in English.

Aims of the course: The teaching will analyze the effects on distribution systems due to lightning events; in particular, the focus will be on the faults related to lightning striking in the neighbor of the distribution line location. The description of the lightning phenomena, the computation of the lightning electromagnetic fields and the interaction of lightning events with distribution systems will be presented.

Teaching program:

Part 1) Introduction to lightning discharge

- Description of the phenomenon
- Lightning Modelling
- Interaction of Lightning with Distribution Systems
- Direct and Indirect Events

Part 2) The Lightning Electromagnetic Fields

- Theoretical description
- Numerical assessment

Part 3) The Lightning-Induced Voltages

- Theoretical description of the Agrawal model
- Numerical Implementation of Agrawal's model in a FDTD code
- The concept of Lightning Performance

Part 4) Application: the LIGHT-PESTO code

- Introduction to the software
- Examples
- Exercises

Exam modality:

Written exercise and discussion

Bibliography:

Slides (in English) provided by the teachers.