ENGINEERING ELECTROMAGNETICS

1. KEY INDICATORS

CFU/ECTS: 6
Professor: Alessandro Galli and Marta Cavagnaro
Contact Professor: Tel. + 39 0644585840; alessandro.galli@uniroma1.it
Contact Professor: Tel. + 39 0644585465; cavagnaro@diet.uniroma1.it
Website Professor: http://151.100.120.244/personale/galli/eindex.html;
http://mwl.diet.uniroma1.it/people/cavagnaro/contacts.html

2. OBJECTIVE OF THE COURSE

The course is aimed to give the theoretical methodologies and the practical knowledge related to the devices and circuits used for the electromagnetic signal processing in the telecommunication systems. The acquired capabilities will be focused on the features of high-frequency devices with specific attention to the guided-wave propagation and to the generation, processing, and detection of the signals in microwave and optical systems. The course will be completed with the study of the computer-aided analysis and design procedures, of the instruments and measurement techniques of high-frequency devices and circuits.

3. ACQUIRED ABILITIES

The course will allow the students to acquire capabilities concerning the analysis, design, and experimental testing of different devices for the generation, processing, and detection of the electromagnetic signals used in modern microwave and optical telecommunication systems.

4. PROGRAM

Introduction to the course – Foundations of electromagnetic fields; Characterization of microwave and optical devices and circuits; Active and passive microwave devices; Microwave waveguiding and resonant structures; Printed circuits and dielectric waveguides; Optical links and propagation features in optical fibers; Optical sources and detectors; Numerical methods and CAD techniques for high-frequency circuit analysis and design; Electromagnetic interferences and compatibility; Instruments and measurement techniques for high-frequency devices and circuits.

5. REFERENCES

Handouts distributed in class.

6. COURSE WEBSITE

Website Professor: http://151.100.120.244/personale/galli/eindex.html;
http://mwl.diet.uniroma1.it/people/cavagnaro/contacts.html