

ANTENNA DESIGN COURSE

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This is an antenna design course, thought to be taught during six weeks with a charge of 24 hours of lectures, 4 hours for consultations, and 4 hours for evaluation. This course will be approved by the realization of an antenna design project, the writing of a document about this design in a paper format and the oral presentation of this work.

The Table of Content of this course is as follow.

TABLE OF CONTENT

- 1.- Antenna Theory and Propagation (3h)
 - 1.1.- Antenna Introduction
 - 1.2.- Antenna Parameters
 - 1.3.- General Concepts of Propagation
 - 1.4.- Friis Transmission Equation
 - 1.5.- Fresnel
 - 1.6.- Propagation Mechanisms
- 2.- Antenna Design (5h)
 - 2.1.- Introduction to Antenna Design
 - 2.2.- The Dipole
 - 2.3.- Introduction to CST
 - 2.4.- Design and Simulation of the Dipole with CST
 - 2.5.- SPIDA Antenna Design
 - 2.6.- Patch Antenna Design
 - 2.7.- Rectenna Design
- 3.- Array Antenna Theory (3h)
 - 3.1.- Basic Array Antenna Theory
 - 3.2.- Basic Array Antenna Simulation with CST
 - 3.3.- Deeper Array Antenna Simulation with CST
- 4.- Array Antenna Design (5h)
 - 4.1.- Fundamentals on Patch Antenna Design
 - 4.2.- Patch Antenna Design in CST
 - 4.3.- Design of a Patch Antenna Array in CST
- 5.- Antenna Size Reduction (2h)
 - 5.1.- Introduction to Size Reduction Techniques
 - 5.2.- Size Reduction by Embedding in High REP Materials
- 6.- Antenna Fabrication (2h)
 - 6.2.- General Considerations
 - 6.3.- Materials and Tools
 - 6.4.- Example of a Constructed Antenna
- 7.- Antenna Characterization (4h)
 - 7.1.- Anechoic Chambers and TEM Cells
 - 7.2.- Characterization without Using Anechoic Chambers or TEM Cells

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