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**engineering consultants**  
communications systems and antennas

Ref.: Short course

A half-day short course on  
Reflector Antenna Design and Analysis

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ABSTRACT

The course is an introduction to the design and analysis of single and dual reflector antennas, center-fed as well as offset. After a brief review of the analysis methods commonly employed for space- and earth-station reflector antennas, the basic design principles will be presented. The single and dual spot-beam antennas are considered, outlining the relationship between size, feed illumination and directivity and sidelobe levels. The influence of struts and subreflector or feed-blockage will be discussed. The origin of cross-polarization in offset designs will be addressed and it will be shown how to improve the polarization characteristics in single reflector systems by using polarization grids, and in dual reflectors by employing the compensation principles by Dragone and Mizuguchi.

## Agenda

- 9:00 – 9:30 Introduction to reflector antennas. Different reflector types. Analysis methods, GO, GTD, PO, PTD, MM. Polarisation conventions.
- 9:30 – 10:45 The single reflector antenna: directivity, beamwidth, illumination function, polarisation characteristics, strut blockage analysis, offset design. Improving the polarisation characteristics by means of polarisation grids.
- 10:45 – 11:00 Coffee break
- 11:00 – 13:00 The dual reflector antenna. Design guidelines,. Blockage calculations. Compensated offset designs.