

Antennas and radio transmission

Radio and transmission

Who should attend:

The *Antenna and radio transmission* course is developed to gain basic understanding of Radio transmission by: Antennas, radio wave propagation and related radio standards. The target groups are those that need a fundamental knowledge of transmission components and terms and how those relates to radio transmission solutions.

Prerequisites:

No pre-knowledge in radio and antennas are needed. Practical experience of radio solutions will support the understanding but is not required.

Content:

The *Antenna and radio transmission* course give the terminology and the understanding of how a communication link over radio is engineered. The course will further give understanding of different factors that will influence the channel. The course have English documentation. Below is an extract of the content.

Radiation fundamentals

- Electromagnetic radiation
- Radiation terms

Radio transmission principles

- Modulation principles
- Digital modulation

Radio wave propagation

- Frequency/wavelength and propagation characteristics
 - Attenuation, dB
 - Reflection
 - Interference

Basic antenna principles

- The isotropic antenna
- Power density
- Absorption area
- EIRP

Antenna characteristics

- Directivity and gain
- Radiation pattern
- dBi
- Front to back ratio
- Polarization
- Impedance

Fundamental antennas

- Dipole
- Yagi antennas
- Ground plane antennas
- PCB-antenna principles

Wireless communication

- The propagation model
- Free space, LOS, No LOS
- Reflection, scattering, diffraction
- Multipath propagation
 - Fading and fading effects
 - Inter symbol interference

Radio

- WLAN
- BT
- Cellular

*Code: Antradtran
Length: 1 day
Fee: 660 EUR + VAT
or according to an offer for "In-house" delivery or a group attending an open event.*

The course is developed for Electronic Engineers that need fundamental knowledge in the subject

No pre-knowledge in radio and antennas are needed

Antennas and radio transmission give terminology and understanding of principles of radio communication.

Our stance of policy regarding pricing and size of group

The Training is done towards a group of persons - and each one is expected to have benefits of the training in the daily work. It means that each participant invest in competence to be more efficient, increase quality and as a result be more comfortable to fulfil the projects.

This is reflected in our way of pricing and the group size of our training. The price for in-house training is consequently related to the number of participants and the upper limit is 12-16. An efficient training requires engaged participants and a continuing dialogue that can be hard to reach with a high number of participants.

Training methodology

This course is composed by our appreciated InfoMap methodology which requires a wide whiteboard. A screen not hiding the board give good conditions to expand subjects and illustrate on the screen at the same time as holding the main presentation on the board.

To keep in mind when to ask for an offer

For an efficient procedure of making an offer we need some information related to the questions below.

If you have access to premises we ask for answers of the following questions.

Premises for training:

- Has the premises a whiteboard with minimum size of 2.5x1.2 (WxH)?
- Is a PC-projector and screen accessible for use?
- Does the screen hide the whiteboard? If not can the PC-projector still be directed to screen?
- Has the premises a flipchart?

It can be good to have the possibility to a more informal way of contact than the training conditions permits. One way to make this happen is during coffee breaks and lunch. We ask if coffee and/or lunch shall be included in the price or if it is handled by participants themselves.

Coffee and lunch breaks:

- How is it expected to be arranged— individual or in common?
- How is the conditions to have coffee/lunch close by training premises?

We appreciate if we can have information about the level pre-knowledge/ experience and the aim of the training for the group and if it is individuals that want to reach further. Naturally we need to know the total number to be trained.

We try to meet Your need regarding time and place of delivery. We appreciate if You can give a couple of choices regarding time of delivery. If You do not have access to premises suitable for training we appreciate a recommendation of a hotel or conference centre.

We use to start our training 8:30 AM, 1 hour lunch at 12 and end up around 4:30 PM. If You have other wishes regarding scheduling tell us and we try to adapt.

Adaptation of *Antennas and radio transmission* to specific needs

If You have a need for an enhance of some part tell us and we try to adapt Your needs.

Frendus is a training company with focus in electronics, telecommunication and data communication. We offer our training services in or own premises in Sweden or internationally. We do high quality training and are open to adapt to the conditions of the group regarding level and content.

We also offer coaching to companies who want to support theirs employees in the role of trainer or to speak to a group.

Welcome to take contact for more information!

Pricing and number of participants

InfoMap Conditions for good training

Keep in mind

Premises for training

Coffee & lunch

Pre-knowledge Aim of training Number of participants

Time and place of delivery Daily time frame

Adaptation

*EMC and ESD
Data Communication
Radio & Transmission
Mobile Systems
Wireless Access*

Train the Trainer