

EMC Introduction

Electronics

Who should attend:

The *EMC Introduction* is developed for Electronic Engineers and Technicians that have no previous knowledge in the EMC-field. The course gives a well structured description of the subject, terminology and understanding of electromagnetical problems. This make a good platform to a more thorough description of how to reach EMC requirements.

Prerequisites:

No pre-knowledge in the EMC-field. Practical experience of electronics will support the understanding but is not required.

Content

EMC Introduction will bring the participant understanding of EMC terms and relations between them. A platform for further EMC insights is set.

Examples of interferences are described, the cause and their effects are discussed. The participants are introduced to the formal requirements and directives that shall be fulfilled in the field of EMC for the CE-label. The full models of the R, L and C components are described. The fundamentals of electromagnetic field theory and antennas are also a part that will support the understanding of important EM phenomena's.

The course have English documentation and is delivered in English or Swedish.

Extract of the content.

EMC Terminology

- EMI/EMC terms
- Interference; Source, Coupling, Offer
- Conducted and Radiated Interference
- E-/H-fields
- Capacitive, Inductive and Conductive
- Emission and Immunity

Examples of Interference

- ESD
- Transmitters
- Lightning
- Oscillators
- Switched Power Supply

Formal EMC-requirements

- CE-labelling according to different directives
- How is CE-labelling done?
- Notified/Competent Body
- DoC
- Standard Categories
- Product requirements
- Methodology of measurement
- Immunity

Non-Ideal Characteristics of Components

- R, L and C and their models
- Skin Depth
- Mutual Inductance
- Ferrites dependence of frequency

Electromagnetic Field Theory

- E-/H-fields
- Wave propagation
- Characteristics of the fields
- Dynamic fields and the TEM-wave
- Multipath propagation

Antennas

- Electric dipole
- Power density
- Magnetic dipole
- Dipole
- Monopole
- Field Characteristics
- Isotropic Radiator
- Antenna Gain
- Baluns

Code: EMC-1
Length: 1 day
Fee: 620 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 and Technicians

No pre-knowledge in the EMC-field.

EMC terms and relations between them, example of interferences, cause and effects. Intro to directives for CE-labelling. The non-ideal characteristics of R, L and C. EM-fields theory and antennas.

***Next event
6th of October
in Linköping***

Special offer!

***3 for 2
or
20% discount
per seat
when order
training before
31st of Dec 2014***

***Reservation
Code:EMCE2014***

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 2.5m x 1.2m (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 *EMC Introduction* 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 their 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