Course Title:

Communication System Design with MATLAB

Course Purpose:

This one-day course shows how to design and simulate digital communication systems using MATLAB. Different channel impairments and their modeling are demonstrated.

Pre- requisites:

MATLAB Fundamentals and knowledge of digital communication systems

- ✓ 1 training day
- ✓ Hours: 09:00-17:00
- ✓ Total training hours: 8

Teaching method

The course combines lectures, demonstrations and practical exercises in MATLAB, using original training books from MathWorks. The course is in Hebrew but the training materials are in English.

Training Center Systematics - Contact information:

Phone number: 03-7660111 Ext: 5 **Email:** training@systematics.co.il

Website: http://www.systematics.co.il/mathworks

www.systematics.co.il | מוקד שירות: 03-7660101 דוא"ל: info@systematics.co.il | טלפון: 03-7660111 פקס: 03-7660120 | סיסטמטיקס בע"מ רחוב ראול ולנברג 4, תל אביב 69719

Course Objective:

Communication over a Noiseless Channel

Objective: Modeling an ideal communication system. Becoming familiar with System objects.

- Creating a random bit stream
- System objects and their benefits
- Modulating a bit stream using QPSK
- Applying pulse-shaping to the transmitted signal
- Modeling a QPSK receiver for a noiseless channel
- Comuputing bit error rate

Noisy Channels and Error Rates

Objective: Modeling an AWGN channel. Using BERTool to compute BER.

- Modeling an AWGN channel
- Using channel coding and decoding
- Using BERTool to compute BER
- Running Monte Carlo simulations in BERTool

Timing Errors and Multipath

Objective: Modeling timing errors and fading channels.

- Modeling phase and timing offsets
- Modeling flat fading channels
- Correcting flat fading with training sequences
- Modeling multipath channels

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