

INTERNATIONAL HELLENIC UNIVERSITY  
School of Science and Technology

*Virtual Labs #2:  
"Fading Processes-Channel Characterization":  
Documentation*

Referring to Courses:  
Mobile Communication Networks,  
MSc in Information and Communication Technology Systems

prepared by

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## 1.0 Preface

This report constitutes the documentation of the 2<sup>nd</sup> virtual laboratory environment that was developed for the "Mobile Communication Networks" and "Sensor Networks" courses of the MSc in Information and Communication Technology Systems, International Hellenic University.

Purpose of the present work is to familiarize the user with the concepts of E/M fading processes with regard to user mobility and modulation-encoding configurations, and enable the user to characterize a channel as narrowband or wideband depending on its characteristics.

The report consists of four main sections.

The first section outlines the basics of E/M propagation theory that are examined in the context of this lab. This is not intended to be a thorough study or teaching material in any case, but rather a starter for more in-depth research and study.

The following three sections provide usage information for the simple user (student of an MSc program in Telecommunications), the supervisor (academic assistant with some knowledge of programming in MATLAB) and the programmer (expert in generic object oriented programming and particularly in MATLAB). The provided information in this leaflet intends to familiarize the simple user with the graphical interface and its potential, endow the supervisor with enough knowledge to create custom exercise scenarios and program expansions, and provide a blueprint for the programmer that has been bestowed with the task of heavily modifying/expanding the original program.

Finally a list of the main MATLAB files/functions that comprise the program is supplied.

September 8, 2010

Liaskos Christos, Electrical Engineer, Dpt. of Informatics, A.U.Th.

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