

Télécommunications

Telecommunications 1: Transmission Lines

IDENTIFICATION

CODE : GE-3-S1-EC-TC1
ECTS : 2.0

HOURS

Lectures : 16.0 h
Seminars : 12.0 h
Laboratory : 3.0 h
Project : 0.0 h
Teacher-student
contact : 31.0 h
Personal work : 15.0 h
Total : 46.0 h

ASSESSMENT METHOD

1 hour midterm exam, 2 hours final exam

TEACHING AIDS

Printed slides.

TEACHING LANGUAGE

English

CONTACT

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AIMS

Knowledge about high frequency systems using transmission lines
Choice of proper transmission line considering applications.
Matching circuit design
RF simulation tools
Basic principles of transmission lines. Comprehensive study of high frequency propagation and standing waves. Knowledge about matching circuits and applications. Different kinds of transmission lines. Link with the wireless propagation domain.

CONTENT

Course: Overview of transmission and high frequency systems. Different line structures, telegrapher's equations and solutions. Lines in sinusoidal steady state. Wave regimes : closed line to a load. Smith chart. Scattering parameters. Impedance matching devices. Transmission lines in pulsed mode. Free space propagation. Radio link.
Seminar: applications on the two-wire line (ADSL), the coaxial line and microstrip line.
Laboratory: simulation in ADS microstrip lines: adaptation, filtering.

BIBLIOGRAPHY

P. F. COMBES - Micro-ondes - tome 1 : Lignes, guides et cavités