



University of Nicosia, Cyprus

Course Code ECE-530	Course Title Adaptive Signal Processing	ECTS Credits 8
Department Engineering	Semester Fall or Spring	Prerequisites ECE-430
Type of Course Elective	Field Engineering	Language of Instruction English
Level of Course 2 st Cycle	Year of Study 1 st	Lecturer(s) Dr Ioannis Kyriakides
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- explain the mean square error
- identify the Wiener least-squares solution
- explain gradient search
- explain LMS and RLS algorithms
- explain LMS FIR and IIR adaptive filters

Learning Outcomes:

After completion of the course students are expected to be able to:

- formulate mean square error
- use the Wiener least-squares solution
- derive autocorrelation matrices
- use gradient search
- use LMS and RLS algorithms
- use block LMS FIR and IIR adaptive filters

Course Contents:

- Adaptive linear combiner
- Mean square error
- Wiener least-squares solution
- Autocorrelation matrices
- Eigenvalues - eigenvectors and geometrical interpretation
- Gradient search and performance surfaces
- The LMS and the RLS algorithms
- Block time and frequency domain LMS FIR and IIR adaptive filters

Learning Activities and Teaching Methods:

Lectures, in-class assignments.

Assessment Methods:

Homework, in-class assignments, projects, exams, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Simon Haykin	Adaptive Filter Theory	Prentice-Hall	2001	0130901261

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Selected research papers to be assigned				