

Procesare digitala de semnale cu aplicatii specifice**Digital signal processing with specific applications****Obiectiv principal**

Disciplina are rolul de a familiariza studentii cu principalele aspecte ale formelor directe si inverse ale transformatelor Fourier si Wavelet (in cele mai cunoscute 3 forme) in abordarea lor moderna. Se vor aborda aplicatii aferente detectarii defectelor, analizei spectrale si evaluarii indicilor de calitate a puterii.

Course Objective

The discipline aims to make the students familiar to the main aspects of the direct and reversed transforms Fourier and Wavelet (in the most popular 3 forms) considering their modern approaches. There will be approached applications corresponding to the faults detection, spectral analysis and evaluation of power quality indices.

Curs

2 ore/săptămână, total 28 ore

Curs (2 ore pe săptămână, total 28 ore)

Principalele capitole ale cursului sunt: Transformatele Fourier discreta si scurta. Calibrarea parametrilor analizei FFT.

Filtre si transformate Wavelet.

Transformata discreta Wavelet (DWT) , transformata de tip Wavelet Transform (WPT) si transformata stationara wavelet (SWT).

Tehnici speciale pentru analiza wavelet. Calibrarea parametrilor analizei wavelet.

Aspecte speciale ale transformatelor inverse.

Compresia si denoizificarea semnalelor.

Studii de caz cu aplicatii ale transformatelor wavelet.

Course

2 hours weekly, 28 hours total

Course (2 hours weekly, total 28 hours)

The main chapters of the course are: The discrete and short Fourier Transform. Tuning the parameters for FFT analysis. Wavelet filters and transforms. Wavelet Discrete Transform (DWT) , Wavelet Packet Transform (WPT) and Stationary Wavelet Transform (SWT). Special techniques for wavelet analysis. Tuning the parameters of wavelet analysis. Special aspects of reversed transforms. Signals compression and denoizing. Case studies of wavelet transform.

Laborator

1 ora/săptămână, total 14 ore

Laborator (1 ora pe săptămână, total 14 ore) –

Aplicatii cu FFT. Calibrarea parametrilor analizei FFT.

Notiuni primare ale lucrului cu DWT. Aplicatii ale DWT

la detectarea defectelor. Notiuni primare ale lucrului cu

WPT.Utilizarea WPT pentru evaluarea indicilor de

calitate a puterii. Notiuni primare ale lucrului cu SWT.

Laboratory

1 hour weekly, 14 hours total

Laboratory (1 hour weekly, total 14 hours) –

Applications using FFT. Tuning the parameters of FFT analysis. Primary notions of working with DWT.

Applying DWT for faults detection. Primary notions of

working with WPT. Using WPT for the evaluation of

power quality indices. Primary notions of working with SWT.